CRB

ISSUE SUMMARY

Financing The State Water Project

Options For Change

By
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EXECUTIVE SUMMARY

This is the third in a series of reports on State Water Project (SWP) financing produced by the California Research Bureau (CRB) at the request of Senator Dan McCorqudale. The first report described in some detail how the state finances the SWP.[1] In a much shorter note, the CRB explored the need to change the SWP's repayment system.[2]

This paper presents 20 options for changing the SWP's repayment system. Each option is designed to resolve at least one of the criticisms raised by academics, SWP contractors, or other water-interest groups.

We grouped the options by their common strategy.

Options That Change Short-Term Shortage Provisions

Option 1 Eliminates Article 18(a)'s Agriculture-Is-Cut-First Provisions & Eliminates Agriculture's Priority For Surplus Water
Option 2 Eliminates Article 18(a)'s Agriculture-Is-Cut-First Provision & Reduces Agricultural Entitlements By One-Seventh
Option 3 Auctions Water Shortage Reductions
Option 4 Creates A Delta Water Charge "Fee-bate"

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1 Dennis O'Connor, "Financing The State Water Project", CRB Issue Brief CRB-IS-94-004, (Sacramento: The CRB, June 1994)

2 Dennis O'Connor, "Is It Time To Talk About Changing The State Water Project's Financing System?", CRB Note vol. 2, no.3., (Sacramento: The CRB, June 15,1994).

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Option 12 Establishes Marginal-Cost Pricing

Options That Reallocate Costs For The Environment

Option 13 Recalculates Recreation & Fish & Wildlife Enhancement Benefits
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Option 15 Reforms The DWR/SWP Budget
Option 16 Expands Management Of The SWP
Option 17 "Contracts-Out" SWP Operations
Option 18 "Privatizes" The SWP

Options That Change Technical Features Of The Contracts

Option 19 Extends The Project To The Year 2050
Option 20 Eliminates "Priority Four"

This is not an exhaustive list of options. There are many variations on these themes. New options could be created, for example, by combining many of the options we present in this paper. Also, some of the options that follow are provocative. The CRB neither recommends nor embraces any one nor combination of options. Rather, the purpose is to help frame and stimulate debate.

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INTRODUCTION

On January 21, 1994, the Senate Committee on Agriculture and Water Resources held a hearing on the financing of the State Water Project (SWP). The California Research Bureau (CRB) opened the testimony by presenting an overview of the SWP's financing system.[3] Then, SWP contractors and other interest groups gave their perspective on how well the SWP's repayment system operated. Many of the participants seemed dissatisfied with the current repayment system.[4] The source of this dissatisfaction varied. For some, it was how the Department of Water Resources (DWR) allocated water during periods of water shortages. For others, it was the "take-or-pay" aspects of the contracts.[5] Still others expressed concern about the perceived misallocation of one of the State's most valuable resources to low value products.

Purpose

This is the third in a series of reports on SWP financing produced by the CRB at the request of Senator Dan McCorqudale. The first report described in some detail how the state finances the SWP.[6] That report provided the framework for the CRB's presentation to the committee on January 21, 1994. In a much shorter note, the CRB explored the need to change the SWP's repayment system.[7]

The purpose of this paper is to explore options for changing the SWP's repayment system. In particular, we are interested in how the SWP's repayment system might be improved in

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3 In our first two papers, we used the term *financing* broadly. Any aspect of the SWP and its operations that affected either the SWP's bonded indebtedness, SWP costs, contractor repayment, or per acre-foot charges fit our use of the term *financing*. The DWR draws a distinction between the SWP financing system and the SWP repayment system. To the DWR, *financing* refers to the management of SWP debt through the sale of bonds and commercial paper, refunding of outstanding bonds, etc. *Repayment* refers to how the contractors repay the DWR for costs incurred in the construction and operation of the SWP. For the rest of this paper, we will follow the DWR's convention.

4 See, for example: Kern County Water Agency, "Financing of the State Water Project", *Presentation to Senate Agriculture and Water Resources Committee,* January 31, 1994; Conni Barker, "Comments of the Association of California Water Agencies", Submitted to the State Senate Committee on Agriculture and Water, January 31, 1994; and John Krautkreamer, "Testimony of Environmental Defense Fund on State Water Project Financing", January 18, 1994.

5 "Take-or-pay" means that regardless of whether the contractors take delivery of water or not, they pay for it.

6 Dennis O'Connor, "Financing The State Water Project", CRB Issue Brief CRB-IS-94-004, (Sacramento: The CRB, June 1994)

7 Dennis O'Connor, "Is It Time To Talk About Changing The State Water Project's Financing System?", CRB Note vol. 2, no.3., (Sacramento: The CRB, June 15,1994).

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the eyes of various stake-holders and interest groups. These groups include the DWR, the SWP contractors, customers of the contractors, environmentalists, and other interest groups.

Problem

The goal of this paper is to propose options for improving the SWP repayment system. However, contrary to standard research procedures, we do so without an objective problem statement. This is because it is virtually impossible to develop a problem statement to which everyone would agree. Each person defines the problem(s) with the SWP's repayment system differently, depending on their own personal perspective. For example, nearly everyone would agree with the following statement:

> *The SWP cannot now, and may never reliably deliver the amount of water promised in the water supply contracts.*

However, there is little agreement about what that statement means. Some argue that this gap between promised and deliverable supplies is the source of all SWP problems. Others would argue that this gap is not a problem at all, especially since the contracts contain provisions for resolving this situation. Indeed, this latter group would argue that if there is a problem with this supply gap, it is the reluctance of the DWR to implement the appropriate contract provisions.

Since it was not possible to develop a universally acceptable problem statement, we took a different approach. Instead of objectively identifying problems with the current repayment system, we identified criticisms. We examined perceptions of what the SWP's financial problems might be, not necessarily actual problems themselves. Indeed, some may argue that this paper is not concerned with problems at all, only symptoms of problems. So be it.

Identify Criticisms

Criticism identification had two stages. First, we wanted to know what problems academics suggest the SWP's repayment system might have. Then, and more importantly, we were interested in the views of those more directly involved with the SWP. That is, we wanted to know what the contractors and other interest groups specifically liked and disliked about the current repayment system.

Academic Views

The literature on public utility financing is voluminous. However, little has been written directly about the SWP. Consequently, the literature search focused more on specific aspects of utility financing that might apply to the SWP, rather than the SWP's repayment system itself.[8]

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[8] The author recommends four books in particular: Edward E. Zajac, Fairness of Efficiency: An Introduction To Public Utility Pricing, (Cambridge, Mass: Ballinger Publishing Company, 1978);

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Water-Interests' Views

Beginning in early May 1994, the author had a series of group and individual meetings with representatives of:

- The Department of Water Resources
- SWP contractors, including both:
  - Urban contractors, their member agencies and customers
  - Agricultural contractors, their member agencies and customers
- The financial community, including:
  - The DWR's bond counsel
  - The DWR's financial advisors
- Environmental interest groups
- Other interested groups and individuals

At the group meetings, free-flowing and often vigorous group discussions centered on the following four basic questions:

- What aspects of the SWP repayment system do you particularly like?
- What aspects of the SWP repayment system do you particularly dislike?
- What features do you need or want in any SWP repayment system?
- What are your specific likes or concerns with declaring the SWP complete?

Criticisms

The survey of economic literature and the group meetings each revealed criticisms of the current repayment system.[9] The following is a synthesis of the general and specific criticisms:

- The DWR's allocation of water among contractors during shortages has been inequitable.
- The SWP cannot now, and may never reliably deliver the official project yield.
- Average cost per acre-foot varies wildly from year to year.
- Average cost per acre-foot is higher than contractors were lead to believe it would be back in the 1960's.
- The current repayment system is economically inefficient.
- The DWR does not appear to be frugal, nor is the DWR accountable for its actions.
- The contracts require the contractors to repay more than just the costs to operate and maintain the SWP and repay all loans.

Michael A Crew and Paul R. Kleindorfer, The Economics of Public Utility Regulation, (Cambridge, Mass: MIT Press, 1986); James C. Bonbright, Albert L. Canielsen, David R. Kamerschen, Principles of Public Utility Rates, (Arlington Virginia: Public Utilities Reports, Inc., 1988); and Organization for Economic Cooperation and Development (OECD), Pricing of Water Services, (Paris: OECD, 1987)

9 The appendix presents the the water-interests' criticisms some detail.

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Options

Based on the results of the literature review and the interviews, we developed options for changing the SWP's repayment system. Some of the options have been suggested before. However, at least half originate with the author. Each option is designed to resolve at least one of the criticisms raised by academics or the stake-holders. Besides simply describing the options, we also broadly characterize the potential implications of implementing the options. The analysis stops short of precisely calculating how each option would change each contractor's bill. State water project repayment is complex. Such an analysis would require data and analysis beyond the scope of this report. Instead, we present "back-of-the-envelope" estimates of the likely changes, given relatively broad assumptions on how the options would be implemented.[10]

Organization

The next seven sections of this paper present the options. Each section describes options that use the same basic strategy to resolve criticisms of the SWP repayment system.

The Strategies

We group the options by their basic strategy. These groups are:

- Options that change short-term shortage provisions
- Options that reduce the official project yield
- Options that set a fixed per acre-foot price
- Options that promote economic efficiency
- Options that reallocate costs for the environment
- Options that change SWP administration
- Options that change technical features of the SWP contracts

BOXES

Frequently, the language of SWP financing is confusing. Words that have general meaning in everyday conversation often have specific meaning in discussions of the SWP. Important differences may exist between terms that usually have similar meaning. The definition of some of the terminology requires so much explanation that few outside the SWP even attempt to understand it. Yet, to fully understand some of the options we present, it is vital that the reader understands certain key terms and concepts.

Throughout this report, we explain important terms and concepts in boxes like this.

[10] For some of the estimates we needed legal-sized envelopes. However, for most we needed oversized manila envelopes.

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We begin each group of options with a description of the criticisms this group of options tries to resolve. Then, we discuss each option in turn. The discussions begin with a general description of the option. Then, where necessary, we present details to clarify how the option would operate. Finally, we discuss the potential implications of implementing each option.[11]

Caveats

This paper does not present an exhaustive list of options. There are many variations on these themes. New options could be created, for example, by combining many of the options we present in this paper. Also, some of the options that follow are provocative. The CRB neither recommends nor embraces any of these options. Rather, the purpose is to help frame and stimulate debate.

We made no attempt to "validate" any of the criticisms. In particular, this paper does not consider the possibility that some criticisms of the SWP repayment system are not a symptom of a system-wide problem. Indeed, the source of some criticisms of the SWP might be problems internal to individual contractors. If, in fact, problems that individual contractors have with the SWP are unique, it might be more appropriate to deal with that contractor's particular problem directly than to reform the entire SWP repayment system.

This paper also does not consider "solutions" that do not involve changing the SWP's repayment system. For example, in our second paper we observed:

> *Most financing problems disappear when the project yields sufficient water. The problem is that it cannot do so on a reliable basis. There are options for permanently increasing the project's yield. The difficulties are:*
>
> - *Developing additional sources of water*
> - *Moving the water south of the Delta*
> - *At a price contractors are willing to pay.*[12]

Finally, this paper does not discuss in much detail *who* would implement each option nor *how* they would implement it. This is because the *who's* and *how's* for each option varies depending upon the option's proponents and opponents. If all players agree to implement an option, the DWR and contractors could simply amend their contracts. If, on the other hand, some players seriously objected to an option, implementation might require California's voters to approve a state-wide ballot proposition or constitutional amendment. Indeed, most of these key players contend that they hold veto-power over many types of changes. These key players include:

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[11] The option discussions assume the reader has a general understanding of SWP financing. The first report in this series provides sufficient background.

[12] Dennis O'Connor, "Is It Time To Talk About Changing The State Water Project's Financing System?", CRB Note vol. 2, no.3., (Sacramento: The CRB, June 15,1994), p.5.

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- The Legislature,
- The DWR,
- The SWP contractors, and
- The bond holders.

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OPTIONS THAT CHANGE SHORT-TERM SHORTAGE PROVISIONS

The key objectives of these options are to:

- *Reallocate water among contractors during periods of shortages*
- *Stabilize the average cost per acre-foot of water*
- *Clarify key provisions of the contracts*

When the contractors signed the contracts in the 1960's, they recognized there would be short term shortages. However, most believed that the shortages would rarely extend beyond the agriculture-is-cut-first provisions of Article 18(a). In addition, most believed that surplus water would regularly be available in other years in sufficient quantity to at least make up any Article 18(a) reductions. This is proving not to be the case, and the ramifications have proved troubling to the DWR and the contractors.

Background

The DWR has implemented Article 18(a) five times: 1977, 1990, 1991, 1992, and 1994. Once, in 1990, the DWR reduced deliveries only to agricultural contractors. Three times the reductions went beyond the agriculture-is-cut-first provisions of Article 18(a): 1977, 1991, and 1992. First round cuts to agricultural contractor reached the "100 percent in any seven years" limit in 1992. Consequently, the DWR has imposed cuts on all contractors proportionally in 1994.

ARTICLE 18(a)

If the DWR cannot deliver sufficient water due to drought or other temporary cause, Article 18(a) of the SWP contracts dictates how the DWR is to reduce requests. Article 18(a) establishes a two-tiered approach to reducing requests. The first round reduces agricultural requests:

(a) "... up to fifty percent (50%) ... of that portion of the contractor's annual entitlement for the respective year ..."; but not more than

(b) "... a total of one hundred percent (100%) [of one year's entitlement] in any series of seven consecutive years ...".

If the first-round cuts are insufficient, Article 18(a) requires the DWR to make any additional cuts without regard to whether the contractor serves urban or agricultural customers. Under the second round of cuts, "... the state shall reduce deliveries to each contractor in an amount which bears the same proportion to the total amount of such necessary further reduction that the contractor's annual entitlement bears to the total of the annual entitlements of all contractors for that year ...". However, the DWR "... may apportion on some other basis if such is required to meet minimum demands for domestic supply, fire protection, or sanitation during the year."

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REQUESTED DELIVERY VS. APPROVED ENTITLEMENTS

By October 1 each year, the contractors submit their preliminary delivery *requests* to the DWR. The DWR reviews the requests to ensure that the amounts, times, and rates of delivery for the up coming year are consistent with the state's overall delivery abilities. If the requests are not consistent with the state's overall delivery abilities, the DWR can modify the request(s), after first consulting with the affected contractor(s).

By December 1 each year, the DWR must give the contractors the initial water delivery schedule for the following year. In doing so, the DWR establishes the initial *approved entitlements* for each contractor for that year. As actual precipitation and snow depth data become known, the DWR updates its water supply estimates. When the updated water supply estimates change significantly, the DWR updates the delivery schedule and (generally) increases the approved entitlement.

The Criticisms

Concerns about Article 18(a) date back at least to the beginning of the 1987-92 drought. In 1987, the DWR formed a task force to review Article 18(a). The task force concluded:

> *Article 18 of the Contract should be comprehensively amended for developments not foreseen by its writers -- such as the mismatch of entitlements and deliveries and the inability to complete project conservation facilities in advance of buildup needs.*[13]

There have been two major criticisms associated with Article 18(a). One criticism relates to the effect implementation has had on some agricultural contractors. The other criticism relates to the way the DWR has interpreted it.

ENTITLEMENTS VS. DELIVERIES

The contracts establish a number of different classes of water. The most important class of water is *entitlement* water. Article 6 of each contract details by year the contractors annual entitlements. The contracts define the annual entitlement as the *maximum* amount of SWP water the DWR is required to deliver, *given sufficient supply.*

The DWR allocates available water supplies among contractors based on their annual entitlements. However, having an entitlement for a certain amount of water does not guarantee that a contractor will receive that amount. *Deliveries* are the amount of water a contractor receives based on their relative entitlement and available supplies.

The key difference is that entitlements are a contractual definition ("paper" deliveries) and deliveries are the actual amount of water the contractor receives ("wet" deliveries).

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[13] Water Service Contractors Council Memo No. 1878, November 12, 1987, p. 2.

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Effect On Agriculture

The SWP delivered virtually no water to agriculture in 1991. Since then, the banks have been reluctant to lend money to farmers that rely solely on the SWP for water. The lenders reason that the farmers no longer have a reliable water supply, and so the land has virtually no value. Farming is a highly leveraged business. A farmer who cannot borrow money, is not a farmer for long. Indeed, some agricultural water districts are having problems with delinquent water bills already.

DWR's Interpretation

There has been a long standing dispute between the urban contractors, agricultural contractors, and the DWR as to the "correct" interpretation of Article 18(a). Some would argue that the DWR's various interpretations clearly favored the agricultural contractors over the urban interests.[14] This year, instead of strictly following Article 18(a), the DWR claimed authority under other sections of the contracts and reduced some of the initial request *before* making the Article 18(a) reductions. In response, the Metropolitan Water District (MWD) deferred approving their annual SWP payment of $413.8 million. This meant MWD did not make the $67 million payment to the state by the January 1, 1994 due date.[15] The parties resolved the issue for this year, and the MWD did pay their bill before it became delinquent. However, the potential for future conflict remains.

The Options

The four options in this section change how the DWR allocates delivery cuts. The first two options simply redefine Article 18(a) and the surplus water provisions. The second two options replace Article 18(a) with provisions based more on market principles.

Option 1 Eliminate Article 18(a)'s Agriculture-Is-Cut-First Provisions & Eliminate Agriculture's Priority For Surplus Water

The original premise behind the agriculture-is-cut-first and agriculture priority for surplus water was that agriculture was more flexible in its use of water and could gear up or throttle down depending on the supply. Most people expected that the agriculture-is-cut-first provisions would be sufficient to cover any temporary shortages. No one anticipated that agriculture would receive virtually no water in a year. Since the basic premise is no longer applicable, this option simply removes both provisions.[16]

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[14] When implementing Article 18(a), the DWR traditionally has allocated the reductions based on the contractors' requested deliveries, not entitlements. The DWR argues that if they allocate water among the contractors on any basis besides beneficial use, they would violate Article X, Section 2 of the California Constitution. This section requires water to be put to a "beneficial use".

[15] The bills are due on January 1, and are delinquent on January 31. According to the DWR, contractors typically make their payment on January 30. This way the contractors can maximize their interest earnings.

[16] The DWR and some urban contractors assert that the agriculture-is-cut-first provisions were a part of a package deal. They contend that agriculture received numerous "advantages" in addition to the

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SURPLUS WATER

The water supply contracts define surplus water as water in excess of that required to meet:

1. All entitlement demands,
2. Reservoirs storage goals,
3. Water quality requirements, and
4. All other SWP requirements (such as recreation water).

The key aspects of surplus water are that the DWR can release it from reservoirs and schedule delivery in advance. The contracts give first priority for surplus water to SWP contractors for agricultural use or for groundwater replenishment. Second priority goes to SWP contractors for other uses, and non-SWP contractors receive the lowest priority.

Details

Each year the DWR estimates the probable supply of SWP water. This amount is either more than, the same as, or less than the contractors' *entitlement* requests. Under this option, in years where the supply is less than contractors requests, the DWR would cutback deliveries to *all* contractors in proportion to their entitlements. In years where the supply is more than contractors entitlement requests, the DWR would allocate *surplus* water based on a new priority system.

This option would require new surplus water priority system. One alternative would be to simply remove agriculture's priority from the current hierarchy. The new priority would then be:

1. Ground water recharge
2. Any SWP contractor
3. Any non-contractor

Some argue that agriculture received an undue benefit from surplus water deliveries early in the project's operation. Therefore, they contend that agricultural contractors ought to give something up to even the books. One alternative is to reduce agricultural contractors' Article 12(d) balances equal to the amount of surplus water deliveries.[17] Some Agricultural contractors might not have sufficient Article 12(d) balances to cover all historical surplus water deliveries. Should that be the case, the surplus water deliveries could be considered a draw against future Article 12(d) balances.

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priority to surplus water. The other advantages agriculture is purported to have received as a part of the package include:

- Greater summer deliveries than urban contractors (18% peaking factor vs. 11%)
- "Easy Payment Plan" for transportation facilities, and
- Capacity at less than full cost.

As with most criticisms of the repayment system, these observations are not universally embraced.

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Implications

Under this option, urban contractors would lose some insulation from short-term shortages. However, some observe that urban areas seem better able to adapt to temporary water shortages than agriculture. In addition, this option would likely prevent agriculture from experiencing a true zero year again.

Option 2 Eliminate Article 18(a)'s Agriculture-Is-Cut-First Provision & Reduce Agricultural Entitlements By One-Seventh

The DWR originally proposed this option, among other proposals, during Article 18 negotiations. This option presumes that with today's water situation, the DWR will always cut agriculture 100 percent in any seven year period. Furthermore, given the slim prospects for future surplus water, this option presumes agriculture would receive virtually no benefit in exchange for the agriculture-is-cut-first provisions.

Details

This option would be implemented as follows:

- Eliminate the agriculture-is-cut-first provisions of Article 18(a);
- Reduce all agricultural contractors' annual entitlements by 1/7th;
- Reallocate fixed cost among all contractors to reflect the new entitlements.

In years that the DWR estimate of the supply of SWP is less than contractors requests, the DWR would cutback deliveries to *all* contractors in proportion to their entitlements.

Implications

This option would shift costs and water.

Cost Shifts

Some fixed costs would shift from agriculture to urban water users. For example, the Delta water charges comprise between 30 and 50 percent of the agricultural contractors' total SWP bill. The net effect to agriculture of lower entitlements and higher Delta water charges is about a 10 percent reduction in the Delta water charges. These costs would shift to urban water users. The urban water users would see about a five percent increase in Delta water charges. Fixed transportation costs would shift in different amounts but for similar reasons.

Water Shifts

If agriculture retains its current priority to surplus water, this option would shift some water from urban contractors to agricultural contractors.[18] This is because agricultural

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[17] When the DWR is unable to deliver requested water due to circumstances beyond DWR's control, such as a drought, the DWR credits the contractor's Article 12(d) balances. The contractors can then request delivery of their Article 12(d) water in a later year.

[18] Assuming no change in annual "wet" yield.

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contractors would share any "shortages" with urban contractor, but would keep all "surpluses".

If agriculture loses its priority to surplus water, this option would shift water one of three ways. The direction of the shift depends on the size of the gap between the paper and wet yields and the new priority for surplus water. Assume, for example, that under the new surplus water provisions, all contractors share surplus in proportion to their entitlements.

If the "yield gap" is:			**Then this option shifts water:**
More than	} 73,000 acre-feet	{	from urban water users to agriculture.
Exactly			across the years more evenly.
Less than			from agriculture to urban water users.

One could argue that if the basic premise of this option is correct, there really is a permanent water shortage and Article 18(b) should be implemented instead.

Option 3 Auction Water Shortage Reductions

This option creates a new cost category -- the water shortages surcharge (WSS). The WSS is a per acre-foot surcharge imposed on approved entitlements when initial requests are greater than the projected supply. The money raised by the WSS would be used to reimburse contractors who reduce their initial requests.

Details

The WSS is a type of auction. When contractors' initial requests are less than or equal to available supply, there is no auction and the WSS would be $0 per acre-foot. When contractors' initial requests exceed the projected supply, the DWR would hold an auction. The auction could be structured a number of ways, but they all would include the same basic elements. Fundamentally, the DWR would increase the WSS in fixed increments, such as $5 per acre-foot. With each incremental increase in the WSS, contractors would be allowed to reduce their requests. The DWR would continue the auction until the revised requests are equal to or less than available supply. The DWR would then set the SWW at such a "market clearing" point. The DWR would distribute the proceeds of the auction to the contractors based on the amount of water the contractors gave up. If one contractor gave up 25 percent of the water, that contractor would receive 25 percent of the proceeds.

There are a number of ways to structure the auction. For example, the contractors could submit their schedule of delivery requests arrayed against possible WSS rates. This way, the DWR would simply find the market clearing rate and inform the contractors of the outcome. The auction could instead proceed with separate rounds. After each round in which the DWR raised the proposed WSS, each contractor, knowing how much shortage remained, could adjust its bid. There are advantages and disadvantages with both set and round-by-round bids, as well as other types of auctions.

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Implications:

If *all* contractors forgo water proportionally, no contractor's bill would change. By contrast, if some contractors forego proportionally more water, they would pay less per acre-foot than those that forego proportionately less water.

Contractors who currently have "excess" entitlements would have an advantage in such a system. Such contractors, for example, could request delivery of their full entitlement. Then, they could reduce their requests to their "true" needs in the first round. In this way, they could obtain payments under the auction from the WSS and still receive all the water they would have otherwise requested. To counter this strategy, the auction could limit initial requests for any contractors. For example, the action could limit *initial* requests to 110 percent of the most amount of entitlement water the contractor ever *received.*

Option 4 Create A Delta Water Charge "Fee-bate"

This option establishes a fixed schedule of fees and rebates for water, based on the probability that the SWP can deliver a specific quantity of water in any year. The contractors would pay a premium or *fee* for water that the SWP could more probably deliver. Contractors would receive discount or *rebate* if they contract for water that is less likely to be available. The more probable the delivery, the higher the fee -- the less likely the delivery, the greater the rebate. This type of pricing structure is called a "fee-bate".

Details:

Fee-bates are a *revenue neutral* schedule of fees and rebates. The fee-bate could be designed to create any number classes of water -- reflecting probability of delivery. Such a fee-bate could replace 18(a) *and* surplus water provisions.

The fee-bate schedule can be defined a number of ways. The schedule need not be symmetrical regarding the amount of the fee-bates, nor must the classes be uniform in size. For example, the table below shows a hypothetical fee-bate schedule with four classes, that is both non-symmetrical and non-uniform. Those buying the most firm 800,000 acre-feet, Class 1, would pay an annual premium of $20 per acre-foot of entitlements. Those buying Class 2 water, the next 1,000,000 acre-fee, would pay a smaller annual premium of $10 per acre-foot. Class 3 water, covering the next 1,400,000 acre-feet, has a $0 fee-bate. Contractors buying the least firm 1,00,000 acre-feet, Class 4, would receive an annual rebate of $26 per acre-foot of entitlements.

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Hypothetical Fee-Bate Schedule*								
Fee-Bate Class	Yield Priority (Thousand Acre-Feet)	Fee-Bate (Per Acre-Foot)	Contractor Entitlements & Fee-Bate By Class Total (Thousand Acre-Feet & $ Millions)					
			Contractor A	Contractor B	Contractor C	Contractor D	Contractor E	Total
Class 1	0-800	$20	450 $9.0	150 $3.0	0 $0.0	100 $2.0	100 $2.0	800 $16.0
Class 2	801-1,800	$10	390 $3.9	100 $1.0	300 $3.0	110 $1.1	100 $1.0	1,000 $10.0
Class 3	1,801-3,200	$0	0 $0.0	590 $0.0	540 $0.0	270 $0.0	0 $0.0	1,400 $0.0
Class 4	3,201-4,200	-$26	0 $0.0	0 $0.0	0 $0.0	360 -$9.4	640 -$16.6	1,000 -$26.0
Total Entitlements Per Contractor			840 $12.9	840 $4.0	840 $3.0	840 -$6.3	840 -$13.6	4,200 $0.0

* Assumes the probability of delivery is symmetric around 2.1 million acre-feet per year

Contractors would decide how much of their entitlement they wanted within each class of the fee-bate structure. They could request that their entitlement be spread somewhat evenly across all classes, or clustered in just one or two classes. In the example above, all contractors have entitlements totaling 840,000 acre-feet. Contractor A required a very firm supply of water and bought only Class 1 and Class 2 water. Consequently, Contractor A's total *fee*-bate would be $12.9 million. Contractor B bought water in each of the first three classes. Its *fee*-bate would total $4.0 million. Contractor C bought all of its water in the middle two classes, and would pay a total *fee*-bate of $3.0 million. Contractor D bought water in all four classes. Because most of its water was in the last two classes, Contractor D received a fee-*bate* of $6.3 million. Finally, Contractor E required some firm and very firm water, but most could be undependable. Contractor E received a fee-*bate* of $13.6 million.

Each year the DWR would estimate the supply of SWP water for the year. It would then determine how many "classes" of water it could provide. For example, assume the DWR estimated the supply in a year to be 2.5 million acre-feet. According to the hypothetical fee-bate schedule, the estimated supply falls right in the middle of Class 3. Consequently, the contractors would receive all of their Class 1 and Class 2 entitlements, and half of their Class 3 entitlements. No class four water would be distributed that year.

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Implications:

This option replaces 18(a) and the surplus water provisions with a market based allocation system. It is quite similar to the non-interruptable and interruptable classes of service offered by many retail water agencies.

Few if any contractors serve 100 percent agricultural or 100 percent municipal and industrial customers. Most contractors have at least some customers of both types. Also, not all customers of the same "type" require the same firmness of supply. Farmers that grow permanent crops may be willing to pay more for a very firm water supply than, for example, a public golf course. By allowing contractors to buy water in each of the classes, they would be better able to match their costs with their customers' demand.

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OPTIONS THAT REDUCE THE OFFICIAL PROJECT YIELD

The key objectives of these options are to:

- *Reduce the gap between entitlements and deliveries*
- *Stabilize the average cost per acre-foot of water*
- *Reduce the demand for SWP water*

When the DWR and the contractors signed the water supply contracts, they all believed the project would reliably deliver the official project yield of 4.2 million acre-feet of water per year. However, the SWP can not supply near that much water. The DWR estimates that the current SWP facilities can deliver 2.8 million acre-feet of water in an average year -- 2.2 million acre-feet in a drought year.[19] (However, the SWP delivered only 549,000 acre-feet in 1991.) According to many, this gap between the official project yield and actual project deliveries is at the root of most SWP repayment problems.

Background

The SWP provides water to 29 local and regional agencies under terms specified in the individual water contracts. The 29 water service contracts entitle these agencies to request a total of 4,154,201 acre-feet of water from the SWP in 1994. By 2021, these *entitlements* will increase to an ultimate total of 4,217,786 million acre-feet per year.

OFFICIAL MINIMUM PROJECT YIELD VS. FIRM YIELD

There are two key measures of SWP water supply: The official minimum project yield and firm yield.

The water supply contracts define *minimum project yield* as "the dependable annual supply of project water to be made available, estimated to be 4,230,000 acre-feet per year..." The DWR has executed contracts to deliver the full amount of the minimum project yield.

Typically, firm yield is used to describe the dependable annual water of existing facilities under current operating rules and restrictions, even during periods of drought. It is likely no one knows what the firm yield is currently. Through 1990, the DWR estimated the firm yield was about 2.4 million acre-feet.[20] However, given recent events, the yield is likely to be even lower.

The key difference is that the minimum project yield is a contractual definition ("paper" yield) and the firm yield is the actual yield ("wet" yield).

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19 Assumes 1990 "level of development" and environmental restrictions no more severe than D1485. Department of Water Resources, California Water Plan Update, Draft Bulletin 160-93, (Sacramento: The Department, November 1993), p. 310.

20 See for example, Department Of Water Resources, "Management Of The State Water Project", Bulletin 132-90, (Sacramento: The Department, September 1990), p. 86.

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ARTICLE 18(b)

The SWP contracts include a provision for reducing total entitlements when the dependable yield of the SWP permanently drops below the official minimum project yield. That provision is Article 18(b). Under Article 18(b), the DWR would proportionally reduce the entitlements of all contractors until the reduced entitlements equaled the "new" minimum project yield. To the extent possible, the DWR must give the contractors five years notice before implementing Article 18(b) reductions.

The Criticisms

Almost every aspect of the SWP repayment system somehow relates to the contractors' entitlements. The DWR allocates fixed costs among contractors based on entitlements. The DWR allocates water among contractors based on entitlements. Indeed, since the amount of water delivered determines the variable costs, entitlements at least partially determine even the variable charges.

THE CONTRACTORS' WATER BILLS

The contractors' annual water bills consist of two charges:

- The Delta water charge, and
- The transportation charge.

Delta Water Charge

The purpose of the Delta water charge is to recover the costs of acquiring and storing water It consists of two components:

- Capital cost component, and
- Minimum operation, maintenance, power and replacement (minimum OMP&R) component.

The DWR calculates the Delta water charge as a fixed rate per acre-foot of entitlements. Each contractor's annual Delta water charge is the fixed rate times the contractor's annual entitlement. Consequently, the Delta water charge *does not vary* with "wet" deliveries.

Transportation Charge

The purpose of the transportation charge is to recover the costs of moving SWP water to the contractors. It consists of four components:

- Capital cost component,
- Minimum OMP&R component,
- Minimum OMP&R component -- off-aqueduct power facilities, and
- Variable OMP&R component.

The DWR allocates transportation costs among contractors based on relative *use*. The contracts define *use* differently for each component. For the capital and minimum OMP&R components, use is based on the contractors' annual entitlements. Therefore, the annual charges for these two components *do not vary* with "wet" deliveries. For the off-aqueduct power facilities and variable OMP&R components, use is the amount of electricity needed to pump the water to the contractor. The annual charges for these two components *do vary* with "wet" deliveries.

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The project repayment methodology was designed assuming that deliveries and entitlements would be approximately the same. Since deliveries have been much less than entitlements, there are problems. The contractors' bills are different than they anticipated. Most noticeably, the average cost per acre-foot of water varies widely from year to year.

The Options

The principle feature that the following four options share is that they all reduce the official minimum project yield of the current SWP. The purpose is to bring the official "paper" yield more in line with the actual "wet" yield. The first option simply imposes Article 18(b) reductions. The second declares the SWP "complete", thereby halting expenditures for any future projects. The third declares the SWP "complete" and authorizes a new California water project. This option shifts the cost of the transportation system's excess capacity to the new project, only those who choose to participate in the new California water project would pay for it. The fourth option approaches the problem of insufficient supply differently, by reducing demand through water conservation projects.

Option 5 Execute Article 18(b)

The DWR could, either independently or by legislative mandate, implement Article 18(b). In either case, the DWR would reduce all contractors' entitlements proportionally until total entitlements more nearly equaled the dependable project yield.

Details

To implement this option, the DWR would first recalculate the minimum project yield.

If the DWR imposed Article 18(b) independently:

- The DWR would decide whether to include prospective projects like Los Banos Grandes in the recalculation; and
- Give the contractors 5-years notice before implementing Article 18(b), *to the extent possible*.

If the Legislature directed the DWR to impose Article 18(b), then the Legislature could presumably:

- Direct the DWR to include or exclude specific projects in the calculation of the revised minimum project yield; and
- Establish an effective date for the entitlement reduction without regard to the five year delay.

Implications

Alone, the imposition of Article 18(b) would not change the contractors' water bills. The contractors' bills are based mostly on the relative distribution of entitlements -- invoking Article 18(b) does not change that relative distribution. However, the imposition of

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Article 18(b) would likely change the amount of water each contractor receives. Consequently, this option would have four main effects. It would:

- Reduce entitlement *deliveries* disproportionately among some contractors;
- Reduce occurrences of short-term shortages;
- Increase availability of surplus water; and
- Stabilize the average cost per acre-foot of water.

Reduced Entitlement Deliveries

If the DWR executed Article 18(b), it would reduce all contractors' entitlements proportionally. However, not all contractors currently request delivery of their full entitlements. Consequently, reducing entitlements by invoking Article 18(b) would affect contractors differently. Contractors who currently request delivery of their full entitlements would see a greater reduction in entitlement deliveries than those who request delivery of less than their full entitlements. This is because in the first case, the reduced entitlements represent reduced "wet" water deliveries, while in the later case the reduced entitlements represent reduced "paper" deliveries. This is illustrated in the table below.

Effect Of Implementing Article 18(b)
Example Of A Contractor Requesting Delivery Of Full Entitlement
Vs A Contractor Requesting Delivery of Less Than Full Entitlements

	Contractor "A"	Contractor "B"
Total Entitlements:	100,000 acre-feet	100,000 acre-feet
• "Wet" Deliveries	100,000 acre-feet	50,000 acre-feet
• "Paper" Deliveries	0 acre-feet	50,000 acre-feet
50 Percent Reduction In Entitlements	-50,000 acre-feet	-50,000 acre-feet
Total Entitlements:	50,000 acre-feet	50,000 acre-feet
• "Wet" Deliveries	50,000 acre-feet	50,000 acre-feet
• "Paper" Deliveries	0 acre-feet	0 acre-feet
Percent Reduction:		
• "Wet" Deliveries	-50%	0%
• "Paper" Deliveries	0%	100%

In this example, both Contractor A and Contractor B have annual entitlements totaling 100,000 acre-feet. Contractor A currently requests delivery of its full 100,000 acre-feet of entitlements each year. Contractor B currently requests delivery of only 50,000 acre-feet of its entitlements each year, thereby taking the delivery of the half of its entitlements as "paper" deliveries. Assume the DWR now reduces entitlements by 50 percent. Both Contractor A and Contractor B would now have annual entitlements totaling 50,000 acre-feet. Contractor B could still request delivery of its traditional 50,000 acre-feet of "wet"

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deliveries. However, Contractor A could request delivery of only half of its traditional 100,000 acre-feet of "wet" deliveries.[21]

Article 18(a)

By reducing the minimum project yield, the DWR would reduce or eliminate the gap between the "paper" and "wet" yields of the SWP. Consequently, the SWP ought to experience shortages less often than before. This means the DWR would need to apply Article 18(a) reductions less frequently.

The effect of a less frequent application of Article 18(a) depends on how much the DWR lowered the minimum project yield. If the DWR lowered the yield such that agriculture continued to experience 100 percent reductions within every seven year period, there would be no change in water distribution. However, if agriculture no longer regularly gave up 100 percent of one year's entitlements, agriculture would receive more water -- water that otherwise would have gone to urban contractors under current policies.

Surplus Water

This option does nothing to change the "wet" yield of the SWP. Therefore, imposing Article 18(b) does not "create" surplus water. Instead, it reclassifies existing water from entitlement water to surplus water.[22] Agriculture receives first priority to surplus water. "Creating" surplus water benefits agriculture and harms urban water users. This is because the "creation" of surplus water is really a shifting of water from urban users to agricultural users. Since the DWR charges less for surplus water than entitlement water, this option would also shifts costs to urban users from agriculture.

There is no guarantee, however, that this option would "create" any surplus water. If the DWR implemented Article 18(b), they might also change how it operates the SWP reservoirs. They might decide, for example, not to distribute "surplus" water and instead decide to store the water for distribution as entitlement water in another year.

Stabilize Average Cost

This option narrows the gap between the "paper" and "wet" yield of the SWP. As the gap narrows, any pressure that might be on the DWR to "drain the reservoirs" in order to deliver full entitlements would likely drop. The DWR could then change its reservoir operations to deliver a more constant supply of water from year to year. Since about 70 percent of the contractors' bills do not vary with the amount of water delivered, more constant deliveries would lead to a more stable average cost per acre-foot of water.

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[21] In this example, the Contractor B's "excess" entitlements acted as an "insurance policy" against delivery reductions. "Excess" entitlements can play a similar insurance like role in Article 18(a) reductions.

[22] No necessarily. If this option were implemented, the DWR might also change how it operates the SWP reservoirs. They could decide, for example, not to distribute "surplus" water and instead decide to store the water for distribution as entitlement water in another year.

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Option 6 Declare The SWP Complete

Under this option, the Legislature would declare the SWP complete. In doing so, the Legislature could:

- Define which facilities are and are not a part of the SWP;
- Require the DWR to stop charging the contractors for work on projects that are not a part of the newly defined SWP; and
- Require the DWR to determine the new project yield and implement Article 18(b).

THE BURNS-PORTER ACT

The Burns-Porter Act is the keystone to SWP financing and project repayment. The object of the Burns-Porter Act was to provide funds to assist in the construction of the SWP. It did so by:

1. Authorizing $1.75 billion in general obligation bonds
2. Defining SWP facilities
3. Establishing repayment priorities
4. Prohibiting the Legislature from impairing the contracts so long as any of the general obligation bonds are outstanding.

Most aspects of the act became effective on November 8, 1960, when California's voters approved Proposition 1, on a vote of 2,857,586 to 2,719,942.

Details

Changes to the Burns-Porter Act would require a majority vote of the state's voters. However, the Legislature might be able to make changes in the SWP without changing the Burns-Porter Act. The Legislature might, for example be able to exclude any additional Delta facilities from the SWP. The Burns-Porter Act defined the SWP facilities to include:

> *(3) Master levees, control structures, channel improvements, and appurtenant facilities in the Sacramento-San Joaquin Delta for water conservation, water supply in the Delta, transfer of water across the Delta, flood and salinity control, and related functions.*[23]

To exclude future Delta facilities from being a part of the SWP, the Legislature might find that only Delta facilities operating as of a specified date are SWP facilities. This might allow the state, without violating the Burns-Porter act, to prohibit additional SWP expenditures on new Delta facilities.

The precise wording of the legislation that declares that the SWP complete is important. For example, suppose such legislation declared that the SWP consisted of only those facilities in operation as of a specific date. Such language could disenfranchise some contractors from the SWP. The SWP, for example, does not currently connect to three contractors -- San Luis Obispo County FC&WCD, Santa Barbara County FC&WCD, and San Gorgonio Pass Water Agency. The Burns-Porter Act might prohibit the newly

[23] Water Code §12934

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reconstituted SWP from excluding service to these contractors. If it did not, the act almost certainly would require the SWP to refund to these contractors all money they have paid the SWP. If, in this example, the Legislature did not intend to disenfranchise these contractors, the legislation would need to specifically include transportation facilities to these contractors in the completed SWP.

Implications

Besides the effects described above from invoking Article 18(b), there are two additional effects of declaring the project complete. First, there would be a reduction in charges to SWP contractors for work not a part of the completed SWP. This might simply be an avoidance of future costs and charges, depending on how the Legislature defines the completed project.

Second, should some become disenfranchised, SWP charges would increase. To date, SWP charges to San Luis Obispo County FC&WCD, Santa Barbara County FC&WCD, and San Gorgonio Pass Water Agency total $14.6 million, $28.4 million, and $27.9 million, respectively. If the SWP had to refund their contributions to date *with interest*, it would total over $105 million. If the SWP had to refund money to any contractor, the DWR presumably would spread the costs of the refund to the remaining contractors.

Option 7 Declare the SWP "Complete" And Designate A New California Water Project

Under this option, the Legislature would not only declare the project complete, but it would also authorize a new California Water Project (CWP). A new CWP would allow for new facilities funded only by those interested in repaying the costs to construct and operate the CWP. If a current SWP contractor found the CWP price too high, they could choose not to participate. In addition, those currently outside the SWP could choose to participate in the new CWP without harming current SWP contractors.

Details

This option could be implemented in two stages. In stage 1, the Legislature would declare the current project complete and authorize the development of a new California Water Project. In stage 2, the DWR would implement those changes necessary for the joint operation of the SWP and the CWP.

Stage 1

During stage 1, the DWR would execute the changes associated with declaring the project complete, as described previously. The DWR would also work out the details of the CWP, including:

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- Identifying the source(s) of water for the new project;
- Estimating the annual supply from these sources;
- Establishing the joint operating policies for the two projects, especially regarding priority to water and to use of transportation facilities; and
- Identifying CWP contractors and their amount of CWP entitlements.

Stage 2

Stage 2 would begin after the DWR worked out the major details of the CWP. In stage 2, the DWR would perform final yield simulations under the various priority rules. The priority to water, for example, might be:

1st All SWP entitlements
2nd All CWP entitlements
3rd Any SWP surplus
4th Any CWP surplus

The simulation would allow the DWR to finalize the yields of the SWP and CWP. If necessary, the DWR would make a final adjustment to the SWP contractors' entitlement levels. Once the DWR determined the yield of the two projects, the DWR would reallocate costs between the two projects to reflect the proportionate use of the transportation facilities.

Implications

The implications of this option are many. However, the impact of this option on the contractors cannot be easily quantified without making many critical assumptions. Two particularly important unknowns include:

- The joint operation rules of the SWP and CWP, including priority, and
- The absolute and relative "wet" and "paper" yields of the SWP and CWP.

Regardless of the precise answer to the above, the results of this option would be similar to the two previous options. That is, this option would:

- Reduce entitlement deliveries disproportionally among some SWP contractors;
- Reduce occurrences of short-term shortages;
- Stabilize the average cost per acre-foot of SWP water;
- Reduce charges to SWP contractors for work not a part of the completed SWP; and
- Shift costs from any disenfranchised SWP contractors to the remaining SWP contractors.

In addition, the shifting of transportation costs from the SWP to CWP would lower costs to SWP contractors presumably without reducing SWP deliveries. For example, the transportation facilities were built to accommodate delivery of 4.2 million acre-feet per year. If the adjusted yield of the SWP and CWP was 2.8 million acre-feet per year and 1.4 million acre-feet per year respectively, one third of the fixed transportation charges could

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shift from the SWP to the CWP. There could be a similar shifting of costs for some conservation facilities as well.

Option 8 Impose A Water Conservation Surcharge

This option imposes a water conservation surcharge on all water delivered by the SWP. The proceeds would be used to fund water conservation projects within the SWP service area.

Most contractors point out that the SWP was designed to deliver 4.2 million acre-feet per year; yet it can reasonably be expected to deliver on average only 2.8 million acre-feet per year. Consequently, from their perspective, there is an under supply of water. That may be true. However, another interpretation is that there is an over-demand for water. This option is designed to reduce demand for SWP water.

Details

This option would impose a fixed surcharge on delivered water -- for example $5 per acre-foot. Assuming the SWP will deliver on average 2.8 million acre-feet per year, this option would raise $14 million per year. Water conservation projects funded by this program should have to demonstrate that they would reduce consumption of SWP water a measurable amount. The types of projects eligible could be diverse -- ranging from toilet retrofit projects, to agricultural land retirement, to reclaimed water projects. Upon completion of each water conservation project, the DWR would reduce the entitlements of the contractor serving the area of the project. To encourage participation, the program might reduce the entitlement by less than one acre-foot for every acre-foot conserved.

Current law might prohibit the use of WSS revenues to fund conservation projects. The Burns-Porter Act restricts the use of revenues generated by the SWP. In priority order, these uses are:

1. Payment of reasonable annual operation and maintenance costs for the SWP;
2. Annual debt service on the general obligation bonds issued for the SWP;
3. Transfer to the California Water Fund as reimbursement for any funds used from it for construction of SWP facilities; and
4. Use for acquisition and construction of:
   - the SWP,
   - facilities authorized as a part of the state Central Valley Project, or
   - facilities authorized as a part of the California Water Plan.[24]

To ensure that the revenues raised by the surcharge could be used to fund conservation projects, the Legislature might define the conservation program as a *facility* in the California Water Plan.

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[24] California Water Code §12937

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Implications:

The United States Marine Fisheries Service (USMFS) has upgraded its listing of the winter-run chinook salmon from *threatened* to *endangered.* The United States Fish and Wildlife Service has also recently listed the Delta smelt as *threatened,* and has proposed listing the California splittail smelt as *threatened* as well. For each of these fish, the USMFS places a ceiling on how many fish the SWP can *take*[25] during normal project operations. When the DWR exceeds the take limit, the DWR must shut down pumping operations.

The take limits for the winter run salmon especially limit SWP operations and reduce water supplies, because the winter run occurs during the prime water exporting season. Indeed, the underlying premise of the SWP was to export water during the winter runoff period, when there was more water than once thought necessary for habitat maintenance or water quality. Listing of the delta smelt further complicates SWP operations, because the smelt spends its entire life cycle in the Delta.

Protecting winter-run salmon and delta smelt makes it increasingly difficult to maintain the current "wet" yield. Considering the difficulties of increasing project yield, a program to reduce SWP demand might be less expensive than alternative yield increasing options.

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25 "Take" is broadly defined to include the following: harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any of preceding actions. 16 USC §1532(19), 50 CFR §17.3.

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OPTIONS THAT SET A FIXED PER ACRE-FOOT PRICE

The key objectives of these options are to:

- *Stabilize the average cost per acre-foot of water*
- *Lower the average cost per acre-foot of water*
- *Reduce demand for SWP water*

In our meetings with the different water-interests, most agricultural contractors and farmers seemed to agree on one point. They believe the SWP ought to operate under a new principle -- "You pay for what you get." If a contractor receives delivery of full entitlement, they agree the contractor should pay the full entitlement costs. Conversely, if a contractor gets half the supply, they feel the contractor should pay half the full entitlement costs.

Background

The DWR, in operating the SWP, does not *set* a price on SWP water. Instead, prices, in the form of average costs, result from two independent sets of actions. These actions are:

- Allocating costs, and
- Allocating water.

Most of the SWP charges to the contractors do not change with the amount of water the contractors receive. Consequently, any change in the level of deliveries profoundly affects the per acre-foot cost of water. In particular, the practical effect of water shortages is to drive the average cost of water skyward.

The Criticisms

In 1977, the DWR cut water deliveries 70 percent from the prior year's level. This resulted in an over 225 percent increase in the average cost per acre-foot of water. In 1991, the DWR cut water deliveries nearly 80 percent, driving up the average cost per acre-foot of water over 280 percent to $620 per acre-foot. The picture for Kern County Water Agency (KCWA) is even more dramatic. With a meager 8,965 acre-feet delivered in 1991, the per acre-foot cost reached the stratospheric level of $4,285. (See chart on next page.)

The Options

The two options in this section set a fixed per acre-foot price on SWP water. In each case, the price varies depending on the point of delivery, much like the current system. The key difference is that the contractors would pay the same *unit* price regardless of whether they received one acre-foot or their full entitlement.

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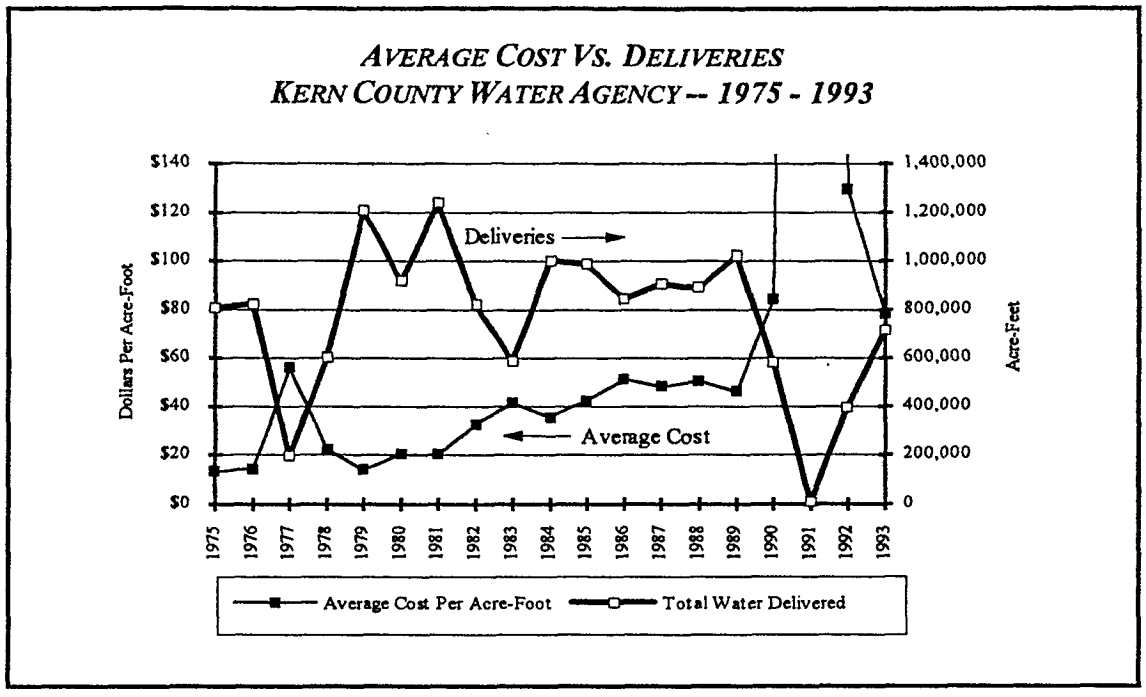

The two options differ in how they set the per acre-foot price. The first option sets the price equal to the average cost per acre-foot when all contractors receive deliveries of full entitlements. The second option sets the price equal to the average cost per acre-foot assuming average deliveries over the life of the SWP, given current facilities.

Option 9 Set Price Based On Full Entitlements

This option sets the price equal to the average cost per acre-foot assuming delivery of full entitlements. The DWR would calculate each contractor's bill by multiplying the price to per acre-foot by acre-feet of water delivered. The per acre-foot price would apply regardless of how much SWP water the DWR delivered. When deliveries equaled total entitlements to all contractors, SWP revenues would equal SWP costs. If, however, the project did not deliver full entitlements in any given year, the costs would not be fully reimbursed by the contractors. Consequently, another fund would be required to augment the contractors' payments.

Details

The following table illustrates how this option would work in 1994 for the Kern County Water Agency (KCWA) and the Metropolitan Water District of Southern California (MWD). The top portion of the chart shows how the DWR would set the price based on costs at full entitlement. The middle part of the chart shows the how the DWR would calculate these contractors' bills for 1994. The bottom of the chart shows the difference in water bills under the current repayment system and this price at full entitlements option.

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1994 Price Per Acre-Foot
Based On Full Entitlements

	KCWA	MWD
Current Costs With Full Entitlement Deliveries		
Total Costs	$60,800,000	$395,000,000
Total Entitlements (acre-feet)	1,018,000	2,011,500
Average Price (per acre-foot)	$59.70	$196.00
Current Costs With Approved Deliveries		
Delivered Costs	$57,700,000	$294,000,000
Approved Deliveries (acre-feet)	509,000	1,005,750
Average Cost (per acre-foot)	$113.00	$292.00
Total Bill Based On Entitlements		
Approved Deliveries (acre-feet)	509,000	1,005,750
Average Price (per acre-foot)	$59.70	$196.00
Total Bill	$30,400,000	$197,000,000
Delivered Cost Vs. Total Bill		
Difference:	$27,300,000	$97,000,000

Revenues from contractor payments would be insufficient to cover SWP costs whenever deliveries were less than entitlements. Consequently, some other source of revenues would have to pick up the difference. Presumably, the state would have to create a "rate stabilization fund" to cover the balance of the SWP costs. Such a "rate stabilization fund" would have to be relatively large. For example, if the SWP delivered 10 percent less than the full entitlement level, the "rate stabilization fund" would need to pick up about 7 percent of the SWP costs. (There is not a direct one percent to one percent reduction because about 30 percent of SWP costs are already on a per unit basis.) The DWR estimates that the current SWP facilities can supply on average about 80 percent of full entitlements over the balance of the project.[26] This means the rate stabilization fund would need to cover on average about 14 percent of the cost of the project, or about $95 million per year. However, in any one year the rate stabilization fund would contribute between $0 and $240 million.

Implications:

This option would have two principle effects. It would stabilize the per acre-foot cost of water to contractors, and it would require a large rate stabilization fund.

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[26] The Department of Water Resources, California Water Plan Update, Volume 1, Draft, (Sacramento: The Department, November 1993), p. 310.

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PRIORITY FOUR

Priority four money is money the contractors are contractually required to pay, that is in excess of that needed to operate and maintain the SWP, repay the bond holders, and repay the California Water Fund. The DWR expects priority four revenues to start accumulating at a rate of about $44 million per year beginning around fiscal year 1998-99. By the end of the project in 2035, the DWR expects to have accumulated between $1.5 and $2.0 billion in priority four balances.

Average Cost

The key advantage of this option is that it would stabilize per unit cost of water to contractors. This would likely make the farmers annual negotiations with agricultural lenders easier, and would probably have system wide benefits as well. Farmers, for example, might actually reduce their demand for water, since they could avoid 100 percent of the cost of water they forgo. Under the current procedures, farmers only save the variable charge of water they forgo, which amounts to about 25 percent of their bills.

Stabilization Fund

This options would require a large rate stabilization fund. As noted above, the fund would require on average $95 million per year. One source in particular has been mentioned as potential revenue sources -- *priority four* funds. However, priority four funds would generate about $44 million per year -- short of the necessary $95 million.

Bond Holders

This option, by its very nature, would produce a less predictable revenue stream to the SWP than the current system. Consequently, the bond holders are likely to be concerned about the security for the rate stabilization fund. Consequently, bond holders are likely to require detailed joint financial and operational analysis before this option could be authorized. Otherwise, credit rating agencies would likely lower the SWP's credit rating, thereby raising the SWP's financing costs.

POTENTIAL ADDITIONAL FUNDING SOURCES FOR THE SWP

Some options would shift SWP costs from the contractors to the state. The state would therefore need to identify the funding source to cover these costs. Potential funding sources include:

Funding Source	*Annual Yield*	*Current Status*
• General Fund	• $41 billion	• Currently in deficit
• California Water Fund	• $25 million	• Funds Delta flood protection, San Joaquin Drain, and Other Non-SWP facilities
• "Priority Four"	• $44 million	• Begins accruing in 1996-97
• General Obligation Bonds (for capital outlay)	• As necessary	• Outstanding G.O. water bonds total $1.2 billion
• New per acre-foot tax on use of all water	• $34 million for each $1 per acre-foot tax	• Not currently taxed

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Option 10 Set Price Based On Expected Deliveries

This option is similar to the previous option. The key difference is that the DWR would allocate costs to contractors and calculate the per acre-foot price based on actual historical and "expected" future deliveries, instead of contractual entitlements. That is, the price would be based on "wet" yield instead of "paper" yield. Consequently, this option would not require annual contributions from a rate stabilization fund.

Like the previous option, the per acre-foot price would apply regardless of the amount of water the contractors received in any year. If actual deliveries equaled expected deliveries to all contractors, the price would cover all costs. To the extent actual deliveries were greater than (or less than) expected deliveries in any given year, this option would generate an annual surplus (or deficit).

This option would require the creation of a "cash flow" fund. Assuming the DWR can accurately estimate "expected" deliveries, this fund would both accumulate and distribute funds, so that in the long run the "cash flow" fund would not require ongoing sources of revenues outside of contractor payments.

Details

The estimates of "expected" deliveries are critical. The DWR would need to run detailed hydrological simulations of the SWP to estimate the average annual yield. The DWR would then use the results to calculated each contractor's "expected" deliveries.

A mechanism for the DWR to routinely reestimate the "expected" delivery estimates would also be necessary. If the "expected" delivery estimates were updated annually, the cost of recalculating them would likely exceed any benefits from improved accuracy. Conversely, reestimating the deliveries less frequently would certainly be less costly to administer, but might allow a poor estimate to stay in effect too long. Poor delivery estimates could cause the rate stabilization fund to acquire too much or not enough funds to remain solvent. Detailed financial and operational studies would likely suggest the appropriate frequency.

Technically, this option could easily be made retroactive to the beginning of the project. Some contractors might end up owing the SWP additional funds. If so, others would be due a rebate.

The following table illustrates how this option would work in 1994 for the KCWA and the MWD. The top portion of the chart shows how the price would be set. The bottom part of the chart shows the effects of charging that price for approved SWP deliveries for 1994.

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1994 Price Per Acre-Foot
Based On "Expected" Deliveries

	KCWA	MWD
Current Costs With "Expected" Deliveries		
"Expected" Costs	$51,200,000	$328,000,000
"Expected" Deliveries (acre-feet)	679,000	1,340,000
Average Price (per acre-foot)	$80.00	$245.00
Current Costs With Approved Deliveries		
Delivered Costs	$57,700,000	$294,000,000
Approved Deliveries (acre-feet)	509,000	1,005,750
Average Cost (per acre-foot)	$113.00	$292.00
Total Bill Based On "Expected" Deliveries		
Approved Deliveries (acre-feet)	509,000	1,005,750
Average Price (per acre-foot)	$80.00	$245.00
Total Bill	$40,700,000	$246,000,000
Delivered Cost Vs. Total Bill		
Difference	$17,000,000	$48,000,000

Implications:

The key advantage of this option over the previous one is that this option would not require an outside funding source, except perhaps a start-up loan to establish the "cash flow" fund. Assuming the DWR estimated the expected delivery accurately, the money the fund accumulated and disbursed would, over the years, net to zero. Like the previous option, this option would stabilize the per unit price of water, albeit at a higher level.

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OPTIONS THAT PROMOTE ECONOMIC EFFICIENCY

The key objectives of these options are to:

- *Change the price of water to better reflect waters economic value*
- *Shift water to more valuable uses*

One of the tenets of modern economic theory is that all goods and services should be priced and allocated in a manner that maximizes the net benefits to society as a whole. Increasingly, people are suggesting that this tenet should apply to water. For example, comments like "water is a scarce and valuable resource -- so it should be used such that society receives the most benefit from its use" are becoming increasingly common.[27]

Background

Economists use the term *efficient* to mean getting the most output from any given set of inputs. The SWP could improve economic efficiency by adopting two key aspects of competitive markets -- voluntary exchange and marginal-cost pricing.

Voluntary Exchange

Economists argue that voluntary exchanges -- between willing buyers and sellers -- promote economic efficiency.[28] In an exchange between a willing buyer and seller, each receives something they value more than what they gave up. As both the buyer and seller gain as a result of the exchange, the transaction has improved economic efficiency.

For example, suppose that SWP Contractor A is willing to pay $250 per acre-foot for an additional 1,000 acre-feet of SWP water. Suppose, too, that SWP Contractor B is willing to sell 1,000 acre-feet of water for $250 per acre-foot. This means that Contractor A values the additional 1,000 acre-feet of water more than $250 per acre-foot. Similarly, Contractor B values $250 per acre-foot more than the 1,000 acre-feet of water he is willing to sell. If Contractor A is allowed to buy 1,000 acre-feet of water from Contractor B for $250 per acre-foot, both the buyer and seller would receive something they value more than what they gave up. Such a transaction, therefore, would improve the lot of both.

Marginal Cost Pricing

The marginal cost of production is the cost to produce the last (or next) unit of production. When producers price their products equal to the marginal cost of producing

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27 A strong case for a more efficient approach to water is made by: Organization for Economic Cooperation and Development (OECD), Pricing of Water Services, (Paris: OECD, 1987).

28 All other things being equal.

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them, the producers are practicing marginal-cost pricing. Under certain conditions,[29] marginal-cost pricing maximizes economic efficiency.

For example, a water resource system that charges the marginal cost for water and sells all its water, should provide more water. This is because the customers have already shown their willingness to pay the cost of providing the additional water. Conversely, if a water resource system charges the marginal cost for water and cannot sell all its water, the system is not supplying water at an economically competitive cost. The water resource system should change its operations accordingly.

The Criticisms

The SWP does not allow contractors to sell or lease their entitlements. The SWP also fails to price the water at the marginal of producing the water. This strongly suggests that the current SWP repayment system might be economically inefficient.

The Options

The two options in this section promote a more efficient allocation of SWP of water. The first option focuses on changing the allocation of entitlements among contractors. The second option changes how contractors are charged for SWP water.

Option 11 Allow SWP Contractors To Buy And Sell Entitlements

This option allows contractors, on a voluntary basis, to sell or lease their entitlements to other SWP contractors at a contractor-negotiated price, as long as the transfer does not adversely affect any non-party contractor.

Details

The price paid by the buyer should have three components:

- The costs of assuming the SWP charges.
- The costs of wheeling the water from the seller to the buyer.
- The premium paid by the buyer to the seller, (could be $0).

The seller would receive both the premium and relief from paying the SWP charges associated with the entitlements sold. The SWP would receive the costs associated with the entitlements and the wheeling charges. The buyer would receive the value of the additional entitlements.

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[29] The conditions are those of perfect competition, including: All products in the market are indistinguishable from each other; each participant in the market, whether buyer or seller, is so small relative to the entire market, that he or she cannot affect the product's price; unrestricted entry and exit into the market of resources, producers, and buyers; all consumers, firms, and resource owners have perfect knowledge of the relevant economic and technological data.

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Agriculture-Urban Transfers

The proposed three component price would guarantee that the transaction would not directly increase costs to non-party contractors. However, a sale of agricultural entitlements to an urban contractor could affect the allocation of water to non-party contractors during periods of shortages.[30] To prevent this from occurring, this option would require the entitlements sold to retain their agricultural or urban character after the sale.

"Paper" Entitlements

To further prevent any such transaction from affecting the allocation of water among non-party contractors, contractors could be prevented from selling "paper" entitlements. These are entitlements to water for which the contractor has never requested delivery. For example, Mojave Water Agency (MWA) has annual entitlements to 50,800 acre-feet, yet has never taken delivery of more than 11,000 acre-feet in any year. Without restricting the sale of "paper" entitlements, MWA could sell entitlements totaling 20,000 acre-feet, and still request delivery of 11,000 acre-feet. Yet the contractor buying the entitlements would also request delivery of the 20,000 acre-feet they just bought. Consequently, such a transaction would increase the demand for SWP water. Such an increase in demand could either cause or exacerbate a water shortage. If this were to occur, the sale of the "paper" entitlements could harm non-party contractors.

Transfers To Non-Contractors

Sales of entitlements need not be limited to existing SWP contractors. The SWP could allow water agencies currently outside of the SWP to purchase entitlements. Current contractors could have first right of refusal to any proposed sale of entitlements. If no SWP contractor wanted to purchase the entitlement, or if none could negotiate an acceptable price, non-SWP contractors could be allowed to buy the entitlements.[31]

Implications

By allowing willing buyers and willing sellers to buy and sell entitlements, this option would appear to improve economic efficiency. This is only true if the net benefits from such transaction are greater than any *negative externalities*. Negative externalities arise when the price does not compensate all who are directly "harmed" by the transaction. For example, when a farmer irrigates a field, not all the water is "consumptively" lost. Much of the water either percolates down into a groundwater basin or runs-off the field. Others, then, can reuse this water. Suppose this farmer now sells this water. Those who would otherwise have reused this water have now been harmed because they no longer can reuse this water. Unless the buyer also compensates this latter group for their losses, this water transfer would cause negative third party impacts.

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30 See "Options That Change Short-Term Shortage Provisions" beginning on page 7.

31 Such a sale would need to be contingent upon the DWR executing a SWP contract with the non-SWP contractor.

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Distributional Effects

Even if a transaction produces more benefits negative externalities, the transaction might never-the-less adversely affect third parties. For example, suppose a cotton farmer sold water to a brewery, and the farmer then permanently fallowed some land as a result. The cotton seed supplier and many other agricultural suppliers would likely be affected negatively by the water sale. Conversely, hop farmers and others that supply the brewery would be positively affected by the water sale.

When a transaction is among members of the same community, the positive and negative effects can, to an extent, cancel each other out. That is, the community's economy would unlikely be harmed. However, when a transaction is between members of different communities, there can be negative community impacts.

Small transactions, 1-2 percent of the seller's entitlements, are unlikely to cause such negative community impacts. However, as the relative size of the transaction increases, the likelihood of such impacts grows. It is not possible to give a generalized relationship between transfer size and likelihood of negative impacts.

There is probably sufficient demand for entitlement transfers to cause third party impacts. For example, by 2010, the MWD expects it will need to increase its annual supply of water an additional 750,000 to 1,230,000 acre-feet from the SWP, water transfers, and surface and groundwater storage supplies.[32] Assume the MWD decides to acquire 500,000 acre-feet of additional SWP entitlements. If MWD acquired those entitlements solely from agricultural contractors, it would reduce agricultural entitlements by 40 percent. This level of entitlement transfers would likely have a negative effect on local communities. However, some disagree whether this is relevant.

Option 12 Establish Marginal-Cost Pricing

This option replaces the current repayment system with a marginal-cost pricing system.

Details

The Organization for Economic Cooperation and Development (OECD) suggests that the price countries charge for water should be the sum of:

- Marginal Operating Costs and
- Marginal Capacity Costs.[33]

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[32] Metropolitan Water District Of Southern California, "Comprehensive Water Resouce Management Strategies For Southern California", presented to State Senate Agriculture and Water Resources Committee Hearing, February 1, 1994, Tab 1.

[33] Organization for Economic Cooperation and Development (OECD), Pricing of Water Services, (Paris: OECD, 1987), Annex 2

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The OECD defines marginal operation costs as those operating costs that vary depending on the quantity of water delivered to the customers. For the SWP, they are the variable OMP&R component of the transportation charge.

The OECD defines marginal capacity costs as the per acre-foot costs associated with the least expensive project that would increase the project's deliveries. Such a project could increase the supply of water or the increase the capacity to move water. The SWP currently adds these costs, once incurred, to the capital components of the Delta water charge and the transportation charge.

If the marginal operating costs and the marginal capacity costs are less than the average cost per acre-foot, the price charged would not raise sufficient revenues to cover all costs. Should this be the case, a fixed charge could be levied on all contractors to make up the revenue shortfall. This charge could be allocated among the contractors in proportion to the contractors' entitlements.

Example

The following table shows how the SWP might price water for KCWA and MWD for 1995 using marginal-cost pricing.

Marginal-Cost Pricing
MWD & KCWA in 1995
(Assumes 2.8 million acre-foot supply)

	KCWA	MWD
Marginal Operating Costs		
Transportation Charges:		
• Minimum OMP&R -- Off Aqueduct (per acre-foot)	$6.05	$51.30
• Variable OMP&R (per acre-foot)	$12.35	$63.95
Total Marginal Operating Costs (per acre-foot)	$18.40	$115.25
Marginal Capacity Costs		
• "Interim" South Delta Water Management Program (per acre-foot)	$60.00	$60.00
Total Price (Per Acre-Foot)	$78.40	$175.25
"Expected" Deliveries (acre-feet)	679,000	1,340,000
Total Marginal Charges	$53,200,000	$235,000,000
Surcharge	$39,800,000	$79,000,000
Total Bill	$93,000,000	$314,000,000
Delivered Charges: Current System	$56,600,000	$464,000,000
Difference	$36,400,000	-$150,000,000
	+64%	-32%

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Marginal Operating Costs: As noted above, these costs are the minimum OMP&R component of the transportation charge for off-aqueduct power facilities and the transportation charge, variable OMP&R component of the transportation charge.

Marginal Capacity Costs: The current transportation system was designed and built to deliver 4.2 million acre-feet per year. Since there currently is no need to increase the capacity of the transportation system, there would be no marginal capacity costs for transportation. However, there would be marginal capacity costs for conservation purposes. According the DWR's Draft Bulletin 160-93, the "Interim" South Delta Water Management Program provides the least expensive option at $60 per acre-foot.[34] Consequently this represents the marginal capacity cost.

Surcharge: According to the DWR's Draft Bulletin 160-93, the average yield of SWP with current facilities is 2.8 million acre-feet per year. This means that the expected revenue from the marginal capacity cost is $168 million ($60 per acre-foot x 2.8 million acre-feet = $168 million). However, total fixed charges for the SWP in 1995 will total $332 million. Under this option, then, the balance of SWP costs of $164 million would be distributed among the contractors in proportion to contractors' entitlements.

Total Price: The contractors would pay the marginal-cost price for each acre-foot delivered. The surcharge would be imposed regardless of deliveries. Assuming the SWP delivered a total 2.8 million acre-feet in 1995, this option would charge KCWA's $93 million versus the $56.6 million under the current system. The MWD would pay $314 million under this option versus $464 under the current system.

Implications

As long as the marginal capacity charge for transportation is $0, this option shifts some charges from contractors further from the Delta to contractors closer to the Delta.

[34] This estimate assumes there would be no new costs for environmental mitigation or restoration in the Delta.

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OPTIONS THAT REALLOCATE COSTS FOR THE ENVIRONMENT

The key objectives of these options are to:

- *Shift charges for environmental protection to the general fund*
- *Reduce charges to the SWP contractors*
- *Give environmental interests a more active role in the SWP*

In 1961, the Davis-Dolwig Act was chaptered.[35] In it, the Legislature made the following statement of policy.

> *The Legislature further finds and declares it to be necessary for the general public health and welfare that facilities for the storage, conservation or regulation of water be constructed in a manner consistent with the full utilization of their potential for the enhancement of fish and wildlife and to meet recreational needs; and further finds and declares that the providing for the enhancement of fish and wildlife and for recreation in connection with water storage, conservation, or regulation facilities benefits all of the people of California and that the project construction costs attributable to such enhancement of fish and wildlife and recreation features should be borne by them. (Emphasis added)*[36]

Many contractors feel that recreation and fish and wildlife enhancement are not paying their full share of SWP costs.

Background

The contractors' concerns center on two issues: Cost allocation and environmental laws.

Cost Allocation

The DWR allocates SWP costs among four distinct purposes. These purposes are:

1. Water supply
2. Power generation,
3. Flood control, and
4. Recreation, fish and wildlife enhancement.

The contractors pay all costs allocated to water supply and power generation. The Army Corps of Engineers pays all costs allocated to flood control. The state's General Fund is ultimately responsible for all costs allocated to recreation and fish and wildlife enhancement. To allocate costs among these purposes, the DWR estimates the relative

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35 Statutes of 1961, Chapter 861

36 Water Code §11900

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benefits fish and wildlife, for example, received as a result of the SWP. The DWR reestimated these benefits most recently around 1981.

Environmental Laws
When most of the contractors signed the water supply contracts, the environmental movement as we know it today was in its infancy. Since the early 1960's, Congress and the State Legislature have passed many environmental protection laws, including:

- National Environmental Quality Act[37]
- Endangered Species Act[38]
- Safe Drinking Water Act[39]
- California Endangered Species Act[40]
- California Environmental Quality Act of 1970[41]
- California Wild and Scenic Rivers Act of 1972.[42]

In addition, state and federal agencies have also enacted numerous rules and regulations to protect the environment. One consequence of these laws and regulations is that the SWP is now limited in when and how much water it can pump out of the Delta.

The Criticisms

The contractors' identify two criticisms: Cost allocation and environmental laws.

Cost Allocation
The contractors observe that since the early 1980s, the DWR has changed how it operates the SWP to benefit fish and wildlife. It also seems likely to these contractors, that society might value the relative benefits of recreation or fish and wildlife more than in the early 1980s. If the benefits of the SWP to either:

(a) recreation and fish and wildlife enhancement have increased, or
(b) the SWP contractors have decreased,

then these contractors assert the DWR has charged them more than their share of SWP costs.

Environmental Laws
Many contractors feel that when they signed contracts with the state for SWP water, they did so with the understanding that the project would be able to deliver the full 4.2 million acre-feet of water each year without violating any existing laws or regulations. Now, various environmental protection laws and regulations preclude the SWP from delivering

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37 42 USC §4321 et seq.
38 16 USC §1536
39 42 USC §300
40 Fish and Game Code §2050 et seq.
41 Public Resource Code §21000 et seq.
42 Public Resource Code §5093.50 et seq.

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the full 4.2 million acre-feet of entitlements. Consequently, from some contractors' perspective, the SWP was over-build. These contractors believe that the government's changing of the rules harmed all contractors. Since the government changed the rules, many contractors feel the government should bear the financial burden.

The Options

This section presents two options for shifting costs from the contractors to recreation and fish and wildlife enhancement. The first option reallocates costs based on current usage of the facilities, but without regard to compensating for "lost" water. The second option specifically estimates the amount of water used for environmental purposes, and formally transfers the underlying entitlements to the environment.

Option 13 Recalculate Recreation & Fish & Wildlife Enhancement Benefits

Under this option, the Legislature would require the DWR to:

- Reallocate costs among purposes,
- Using updated estimates of the benefits each purpose receives from the SWP,
- Based on current operational requirements.

Details

Consistent with the initial contracting principles, the DWR would use the separable costs-remaining benefits method of allocating costs among purposes for each multi-purpose facility. The DWR would be required to consider how the DWR operates the SWP. Currently, for example, virtually all water released from Oroville Dam in critically dry years is used to maintain Delta water quality. Therefore under this option, the DWR would assign fewer benefits to the contractors from Oroville for critically dry years and reduce SWP charges to the contractors accordingly. The DWR would shift these charges to recreation and fish and wildlife enhancement, and ultimately the General Fund.

Implications:

In recalculating the benefits attributed to each purpose, the DWR would likely:

- Increase the benefits assigned to recreation and fish and wildlife enhancement, or
- Reduce the benefits assigned to water supply purposes,
- Or both.

Consequently, the DWR would likely shift costs from the SWP contractors and to the General Fund. It is difficult to say how much the contractors' bills would change. The recalculation would be quite complex and would require much data. However, we can make some gross estimates about the potential magnitude of the shifts. Assume, for example, that one-half of all costs at Oroville currently attributable to water supply would shift to recreation and fish and wildlife enhancement. Under this option, the DWR would reduce the Delta water charge almost $12 per acre-foot, a reduction of nearly 60 percent

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from current levels. Such a shift would cost the General Fund an additional $50 million per year.

Option 14 Establish Entitlements For The Environment

Under this option, the Legislature would require the DWR to establish entitlements for the environment. The entitlements would equal that amount of SWP water now unavailable to the contractors as a result of environmental laws and regulations. In particular, this option would:

- Proportionally reduce the contractors' entitlements to reflect the reduced yield caused by environmental regulations, and
- Shift those entitlements to the environment.

Details

To implement this option, the DWR would:

1. Estimate the dependable project yield with current facilities and 1960's environmental restrictions. (At this point the DWR could reduce total entitlements to the estimated dependable project yield by imposing Article 18(b)).
2. Estimate the dependable project yield with current facilities and current environmental restrictions.
3. Define the environment's entitlement as the difference between (1) and (2).
4. Reduce each contractors' entitlements by an amount equal to the percent difference between (1) and (2)
5. Define the environment's point of delivery, for cost allocation purposes, as the point the DWR would have delivered each entitlement to each contractor prior to shifting the entitlements to the environment.
6. Amend Article 18(a) to define how water shortages will affect environmental entitlements.

If necessary, the DWR could repeat this process to reflect any new restrictions on water deliveries as a result of environmental laws.

Under this option, the entitlements assigned to the environment would be administered by the Department of Fish and Game (DFG) or some other state agency. As administrator over the environment's entitlements, the DFG would act like any other SWP contractor, scheduling delivery, etc. For scheduling purposes, the definition of deliveries for the environment could be defined to include both releases from reservoirs and Delta pumping moratoriums.

Implications

This option would change the repayment of SWP. It would not, however, reduce water deliveries. This is because the environmental entitlements represent water the SWP cannot deliver to the contractors anyway.

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As the following table shows, this option's effect on project repayment depends on:

- The year the entitlement shift begins,
- The official project yield, and
- The amount of entitlements shifted to the environment.

Environment's Share Of Costs Incurred To Date Includes Accrued Interest ($ Millions)				
First Year Of Entitlement For Environment	Minimum Project Yield			
	4.2 Million Acre-Feet Environment's Entitlements		3.6 Million Acre-Feet Environment's Entitlements	
	500,000 Acre-Feet	1,000,000 Acre-Feet	500,000 Acre-Feet	1,000,000 Acre-Feet
1963	$763	$1,530	$890	$1,780
1978	$538	$1,080	$628	$1,260
1990	$150	$300	$175	$350

Effective Year

The first of the three key assumptions is the first year entitlements shift from the contractors to the environment. There are three logical choices for the first year of the shift:

- 1963 -- the year of the first SWP entitlements;
- 1978 -- the year of water rights decision D-1485, which establish water quality requirements for the Delta; or
- 1990 -- the first year after D-1485 that the DWR reduced deliveries to contractors.

If the first year of the shift is 1978, the environment's share of historical SWP charges would be 3.5 times higher than if the shift began in 1990. If the first year of the shift is 1963, environment's share would be nearly 1.5 times higher that if the shift began in 1978, and about 5 times higher than beginning in 1990.

Official Project Yield

The SWP's official minimum project yield is the next key variable. The DWR could impose Article 18(b) before establishing the environment's entitlements. For example, in calculating the current project yield without environmental restrictions, the DWR might discover the "wet" yield was 600,000 acre-feet lower than the official yield. If the DWR then reduced the official project yield, the environment's share of historical SWP costs would be about 14 percent higher than if the DWR left the official yield at 4.2 million acre-feet.

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Entitlement Shift

The final key unknown is the size of the entitlement shift. We "guesstimate" that the DWR would shift between 500,000 acre-feet and 1 million acre-feet from the contractors to the environment. If the DWR shifts 1 million acre-feet, the environment's share of historical SWP charges would be twice that of a 500,000 acre-foot shift.

Total Cost

Under this option, the environment's share of past SWP charges could range from the $150 million - $300 million range to as high as $890 million - $1,780 million. The SWP's annual charges to the environment would be about $80 per acre-foot of entitlements, or about $40 million - $80 million per year. Under existing law, the General Fund would be ultimately responsible for these charges.

Environment & SWP

This option would clearly change the historical relationship between the SWP and environmental interests. The custodian of the environment's entitlements would have a much more direct role in SWP operations. Indeed, the custodian, like SWP contractors, would have a vested interest in the efficient operation of the SWP. Also, if the DFG was the custodian, the environment's SWP charges would likely be funded through the DFG's budget. Since the Legislature annually appropriates funds to the DFG through the budget process, this option could give the Legislature a more direct role in SWP funding.

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OPTIONS THAT CHANGE SWP ADMINISTRATION

The key objectives of these options are to:

- *Increase the cost effectiveness of SWP operations*
- *Reallocate costs of DWR to more appropriate funding sources*
- *Increase SWP contractors' role in SWP financial decision making*

Many SWP contractors and other water-interest groups criticize the DWR and it's fiscal control over the SWP. The critics tend to focus on one of three concerns:

- The DWR does not appear to operate the SWP cost effectively -- often spending money on unwanted or unnecessary projects and studies;
- When the DWR makes decisions with which the contractors disagree, the contractors' have no recourse; and
- The DWR's operation of the SWP and the DWR's statewide water planning responsibilities often seem to conflict

Background

The DWR's operations budget, like most state programs, is a current-services budget. In developing each years budget, the Department of Finance (DOF) requires the DWR to identify only changes to the *current level of service* for specific consideration. The DWR proposes these changes in a Budget Change Proposal (BCP). All other changes to the DWR's budget not specifically identified in a BCP are changed as a part of the baseline budget. Changes to the baseline budget often include adjustments for wages, salaries and benefit increases, materials costs increases, and other baseline adjustments.

The contractors pay all reimbursable costs[43] of the SWP. However, they have no formal role in determining how much and on what the DWR spends on the SWP. Indeed, even the Governor and the Legislature have less direct control over the SWP than other state programs. This is because state law continuously appropriates SWP contractor payments to the DWR for the operation of the project.

The Criticisms

Since the contractors have no formal role in SWP operations, cost containment within the SWP is a serious concern. Many contractors cite their favorite examples of how the DWR allegedly wastes money. Often, their examples do not demonstrate that the DWR is wasteful in how it does things. Rather, the examples show DWR spending money on things that the contractors deem unwanted or unnecessary. Nonetheless, many will also admit that the DWR is not the sole reason SWP costs are "high". Some contractors and

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[43] Reimbursable costs are those allocated to water supply and power generating purposes.

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other water-interest groups think that the DWR does not run the SWP as efficiently as possible, in part, because the DWR must operate the SWP and protect the state's water resources. Many contractors frequently opine that the SWP is forced to incur costs more rightfully funded by the General Fund.

Contractors frequently cannot determine if charges are appropriate, because the budget is structured clearly. It is difficult for the non-budget technician, for example, to find how and why the DWR or DOF have adjusted the baseline budget. Indeed, even knowledgeable budget technicians can have problems determining whether the level of the current services budget is appropriate, with or without adjustments.

The Options

The next four options attempt to resolve some of these criticisms. The first option gives the contractors and other stake-holders more say in the budget process. The second option includes the contractors in the management and decision making structure of the SWP. The third option "contracts-out" the operation of the SWP. The final option "privatizes" the SWP.

Option 15 Reform DWR/SWP Budget

This option imposes more strict budgetary controls on DWR's SWP budget. There are at least three methods to tighten budgetary controls:

- Zero-base DWR's budget,
- Cap SWP operating costs based on a price index, and
- Require Contractors' approval of all budget change proposals (BCP's).

Details

Each of the three methods to tighten budgetary controls can be implemented alone or in conjunction with the others.

Zero-Base Budgeting

The DOF, in conjunction with the DWR, could zero-base DWR's budget. A *zero-base* budget is where the DOF and DWR would examine all of DWR's activities and determine if they are appropriate. The DOF would first eliminate funding for all unnecessary activities. The DOF would then reexamine all remaining activities to determine the appropriate level of effort and the appropriate funding source. The DOF and DWR would then submit this *zero-based* budget to the Legislature as a part of the annual budget process. The DOF would then establish a fixed schedule to periodically "rebase" the DWR's budget. Many contractors assert that zero-basing DWR's budget would reveal many examples of unnecessary expenditures and inappropriate billings to the contractors.

Cap Operating Costs

The Legislature could cap the SWP's fixed operating costs by limiting annual cost increases to the annual growth in a specific price index. The DWR would have to submit

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a BCP to the DOF for approval of any increases above the limit. Such a limit could be defined a number of ways. For example, the cap could be the growth in the annual US Consumer Price Index less one percent. Such a cap could highlight fast growing expenditures that might otherwise escape budgetary scrutiny. The cap could apply to individual cost centers or the total SWP.

Contractors' Approval Of BCP's

The Legislature could make the contractors a more active participant in the budget process. Currently, the DWR briefs the contractors each year on what is in the DWR's proposed budget. Some contractors report the briefing is more of a monologue rather than a dialog. It need not be so one-sided, however. For example, the Legislature could require the DWR to submit all BCP's to the contractors and then formally request the contractors to present their concerns to the appropriate budget committees. The Legislature could also direct the Legislative Analyst's Office (LAO) to specifically consult with the SWP contractors when the LAO develops its annual review of the state budget. The Legislature's budget committees could schedule special hearings on the SWP budget and invite all contractors to testify. The Legislature might also create a SWP Commission, which could make all capital-outlay allocations. There are indeed many variations on this theme.

Implications

Zero-base budgeting can be expensive and time consuming. As an alternative, the state might call for an independent audit of the DWR administration of the SWP. Such an audit might focus, for example, on which DWR charges for the SWP are appropriate. Any examination of the appropriateness of charging practices is likely to uncover instances when the general fund would be the more appropriate funding source.

Option 16 Change The Management Of The SWP

The SWP contractors complain that they do not have any real voice in managing the SWP. This option changes the organizational structure of the SWP to formally include the contractors.

Details

This option changes the SWP in two fundamental ways. First, it splits the SWP from the rest of the DWR. The SWP then becomes a new state entity headed by a chief executive officer (CEO). Second, it creates a board of directors for the SWP. The board of directors, which would include the contractors, would establish and implement the operational policies of this new state entity.

Split-Off The SWP

This option cleanly segregates the DWR's SWP activities from its planning and public safety activities. This is not a trivial step. Distributed support activities -- such as budgeting and accounting, computer systems operations, and personnel management --

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must also be divided among the two groups. A zero-base budgeting approach would be particularly helpful in segregating these distributed support activities.

Create SWP Management

A new SWP agency would operate the SWP. A board of directors would manage the SWP. The Legislature could create the board at least two ways. It could create a SWP Commission, or it could authorize the DWR and the contractors to form a joint powers authority (JPA) under which the SWP agency would operate. Both types of organization have advantages and disadvantages.

SWP Commission: To create a SWP Commission, the enabling legislation would:

- Establish the breadth and limits of the commission's authority over the SWP, and
- Define the membership of the commission.

The membership could include not just the SWP contractors, but also representatives of the Legislature, State agencies, business, labor, agriculture, and environmental interests. Typically in such commissions, each commissioner has one vote, although some commissioners could be designated as *ex officio* without voting privileges.

Joint Powers Agreement: Rather than create a SWP Commission, the Legislature could authorize the DWR and contractors to form a JPA. The JPA could take a number of forms. Perhaps the simplest would be for the DWR and the contractors to form the SWP agency. The SWP agency would be responsible for the day to day operations of the project and would consist of the portion of DWR broken apart from the planning and public safety programs. The management agency would be responsible for setting management objectives, financial policies, and operations criteria. Voting rights in the JPA could be defined a number of ways. For example, the DWR could have 25 percent of the vote, and the SWP contractors could have 75 percent distributed among the contractors proportionate with entitlements. In addition, the JPA could be given the power to hire and fire the chief executive officer of the SWP agency.

Implications:

The costs to segregate the SWP from the rest of the DWR are unknown. In addition, productivity and operational efficiencies might decline during the transition period.

This option has potential long-term savings to contractors. Even if this option does not result in any long-term savings, however, it would give the contractors greater authority over SWP decision making. This might be sufficient to justify implementing this option.

Option 17 "Contract-Out" SWP Operations

Critics assert the DWR does not have an economic incentive for to operate the SWP cost-effectively. They argue that the potential to make a profit is the strongest incentive to

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operate any organization cost-effectively, and that this applies to the DWR as well. This option puts the right to operate the SWP out to competitive bid.

Details

To implement this option, the state would:

1. Conduct a feasibility study to identify the activities to be contracted out and develop an implementation plan.
2. Place the proposal out to bid and select the winning bidder.
3. Transfer SWP operations from the DWR to the winning bidder.
4. Reorganize (and possibly downsize) the DWR to reflect its new roles and responsibilities.

Feasibility Study

The feasibility study should determine precisely what aspects of the SWP would best be performed by a private entity. It should also describe in detail how the state should transfer of SWP operations to the winning bidder. In particular, the feasibility study should:

- Establish the roles and responsibilities of the SWP contractors, the DWR, and the new SWP operator;
- Define and resolve legal and contractual constraints;
- Identify critical performance measures; and
- Estimate implementation costs and potential savings.

The study should also produce the following documents:

- A detailed implementation plan;
- Proposed language for any necessary law changes and SWP contract amendments; and
- Draft language for key contract provisions.

The state should strongly consider contracting-out for the feasibility study for at least two reasons. First, it would be consistent with the spirit of this option. Second, firms interested in bidding to operate the SWP would likely bid to conduct the feasibility study as well. Consequently, they would have an incentive identify and resolve any obstacles to implementing this option. To ensure that state interests are protected, the Legislature should consider holding hearings on the results of the feasibility study.

Implications:

The SWP would pay the winning bidder its costs to operate the SWP as called for in the winning bid. These operating cost would then be distributed among the contractors using current cost allocation methods. Bids could be higher than current operating costs. Consequently, the DWR should also be allowed to bid on the contract.

If the DWR won the contract, they would be prohibited from charging the SWP more than the contract amount. Should the DWR incur operating cost higher than allowed under the

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contract, the Legislature might have to provide the additional funding. However, if the DWR won the contract, they might operate the SWP at a cost lower than the contract amount. Should this occur, the DWR should be allowed to redirect the "profit" to other purposes.

Option 18 "Privatize" The SWP

Some critics of government assert that government does not utilize its assets to its maximum advantage. Private industry, they argue, more effectively uses new and innovative methods to reap financial advantage out of its land and capital investments. This option sells the SWP to a private entity. The proceeds of this option would be used to retire outstanding SWP debt. Proceeds above the cost of retiring debt would be available for water resources management and other state programs.

Details

Like the previous option, this option would be implemented in four major steps. The state would:

1. Conduct a feasibility study to determine which SWP facilities and operations would be sold and develop an implementation plan.
2. Place the proposal out to bid and select the winning bidder.
3. Transfer SWP operations and facilities from the DWR to the winning bidder.
4. Reorganize (and possibly downsize) the DWR to reflect its new roles and responsibilities.

Feasibility Study

The feasibility study would likely be more critical to this option than to the previous option. The feasibility study should determine precisely which SWP facilities and operations would be sold. It should also detail how the transfer of SWP facilities and operations should be accomplished. In particular, the feasibility study should:

- Establish the roles and responsibilities of the SWP contractors, the DWR, and the new SWP operator;
- Define and resolve legal and contractual constraints, including
  1. Bond covenants on outstanding bonds,
  2. Federal tax laws regarding tax exempt bonds,
  3. SWP contracts, and
  4. The Burns-Porter Act; and
- Estimate implementation costs and potential savings.

The study should also produce the following documents:

- A detailed implementation plan;
- Proposed language for any necessary law changes and SWP contract amendments; and
- Draft language for key contract provisions.

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The state should strongly consider contracting-out for the feasibility study for at least two reasons. First, it would be consistent with the spirit of this option. Second, firms interested in bidding to operate the SWP would likely bid to conduct the feasibility study as well. Consequently, they would have an incentive identify and resolve any obstacles to implementing this option. To ensure that state interests are protected, the Legislature should consider holding hearings on the results of the feasibility study.

Implications:

This option might not be viable. Covenants on outstanding bonds will require particularly careful examination to ensure the state does not harm the bondholders. In a worse case scenario, a court challenge to the sale of the SWP could result in some of the general obligation bonds losing their tax exempt status. This would have profound implications on the state's credit ratings. Consequently, the Legislature should closely scrutinize the results of the feasibility study before proceeding with this privatization option.

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OPTIONS THAT CHANGE TECHNICAL FEATURES OF THE CONTRACTS

The key objectives of these options are to:

- *Delay repayment of SWP charges for contractors*
- *Reduce contractor charges*

The next two options make technical changes to the contracts that would reduce costs to the contractors. The first option reduces annual charges by extending the life of the project. The second option reduces contractor costs by eliminating repayment charges for SWP costs beyond regular operation and maintenance, and repayment of debt.

Option 19 Extend Project to 2050

Under the existing contracts, the contractor will have repaid all SWP charges by 2035. This option extends the repayment period for the SWP to the year 2050.

Details

Extending the project would lower all the contractors' Delta water charges, and agricultural contractors' transportation capital charges. Delta Capital charge would decline about $1.20 per acre-foot of entitlement or 10.6 percent for all contractors[44] Transportation charge, capital component for KCWA, for example, would decline $0.70per acre-foot of entitlement or 8.0 percent. The transportation charge, capital component for M&I contractors would be unchanged. All together, extending the project life to 2035 would reduce annual SWP charges to KCWA by about 3 percent per year, while MWD would see about a 0.5 percent decrease.

Implication

This option shifts a portion of SWP costs from the period 1960-2035 to the period 2036-2050. It also extends all contract provisions to 2050.

Option 20 Eliminate "Priority Four"

Many contractors protest the existence of "priority four" money. Essentially, priority four money is the interest earned on money the SWP has borrowed interest free. This option

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[44] Cost estimates were based on a project interest rate of 4.62 percent. To the extent the revenue anticipation notes sell at a higher rate, the savings to the contractors will be slightly less.

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changes the contractors' repayment provisions to prevent the SWP from accumulating priority four money.

Details

The term *priority four* derives from the Burns-Porter Act,[45] which established four authorized uses of SWP revenues, and sets them in priority order. These uses are:

1. Payment of reasonable annual operation and maintenance costs for the SWP;
2. Annual debt service on the general obligation bonds issued for the SWP;
3. Transfer to the California Water Fund as reimbursement for any funds used from it for construction of SWP facilities; and
4. Use for acquisition and construction of:
   - the SWP,
   - facilities authorized as a part of the state Central Valley Project, or
   - facilities authorized as a part of the California Water Plan.[46]

Priority four arises because the contractors repay all SWP costs with interest, yet the DWR repays California Water Fund moneys used to finance SWP construction without interest. The DWR estimates that priority four funds will begin accumulating in fiscal year 1998-99, at about $44 million per year, and will total $1.5-$2.0 billion in 2035, the last year of the SWP contracts.[47]

There are at least three alternative ways to change the contractors' repayment provisions to prevent the SWP from accumulating priority four money.

Alternative 1: Recalculate repayment of each facility based on the financing costs of the facility, not the construction cost.
Alternative 2: Rebate "excess" contributions to each contractor in proportion to the amount each contractor paid towards capital costs.
Alternative 3: Include funds borrowed interest free in the calculation of the project interest rate. Then recalculate each contractors' charges based on the new lower interest rate.

Implications

The details of the three options are fairly technical, but each has its advantages and disadvantages.

Alternative 1: Computationally the most difficult, but potentially the most accurate.
Alternative 2: Administratively simple, but potential exists for over or under estimating the size of the rebate.
Alternative 3: Computationally the most elegant. However, when the contractors were faced with growing interest charges on revenue bonds, they chose not to

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45 Chapter 1762, Statutes of 1959.

46 California Water Code §12937

47 Chet Winn, Chief, Division of Fiscal Services, personal conversation, June 10, 1994.

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adjust the project interest rate. Instead, they created the water system revenue bond surcharge.

Regardless of the approach, the results should be approximately the same. Chiefly, the State would no longer collect funds in excess of repayment needs.

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APPENDIX:
IDENTIFYING THE CRITICISMS

The following is a by-product of our research on criticisms of the SWP's repayment system. It is not the CRB's usual practice to report or interpret the positions of various participants who are engaged in a policy debate. Indeed, it was not our original intent to produce such a document in this investigation either. However, once we identified and verified the views of the various interest groups, we deemed the information valuable. Consequently, we added to our usual role of policy researchers by serving as investigative reporters as well.

The views expressed in this appendix are those of the individual discussants. They do not represent the official views of their organization, nor others in their interest groups. Also, we have made no effort to verify opinions that may be presented as facts. The CRB cautions the reader not to accept as fact any observation by the discussants that we report.

Introduction

Beginning in early May 1994, the author had a series of group and individual meeting with representatives of:

- The Department of Water Resources
- SWP contractors, including both:
  - Urban Contractors, their member agencies and customers
  - Agricultural Contractors, their member agencies and customers
- The financial community, including:
  - The DWR's bond counsel
  - The DWR's financial advisors
- Environmental interest groups
- Other interested groups and individuals

Group Meetings

Some of the meetings included only representatives of one group or another. Other meetings included representatives of more than one interest group. The author structured all the group meetings the same. The author first gave a brief overview of the nature of the study, expected timeline, status of the project, and the ground rules.

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There was, in fact, only one ground rule -- the author would not attribute any observations or comments to any specific individual without first receiving approval from that individual. The purpose of the rule was to allow participants to speak freely and not be concerned about any need for self editing.

Then, there was a free-flowing and often vigorous group discussion centered on four basic questions. The questions were:

- What aspects of the SWP financing do you particularly like?
- What aspects of the SWP financing do you particularly dislike?
- What features do you need or want in any SWP financing system?
- What are your specific likes or concerns with declaring the SWP complete?

Each meeting had its own personality. In some meetings, the participants had very distinct opinions about the strengths and weakness of the current financing system and had fairly complete proposed solutions. In other meetings, the participants seemed more interested in recounting the history of perceived injustices than in grappling with potential solutions. In still other meetings, the participants seemed generally satisfied with the current system, or had only vague concerns they had difficulty articulating.[48]

Synthesized Views Of The SWP

As the meetings progressed, it became clear that each interest group had their own unique view of the SWP. Yet through most of the meetings, the participants consistently raised certain themes. We first present a synthesis of the general themes and then present the general views of the individual interest groups.

Major Themes

Throughout the interview process, certain topics and opinions repeatedly appeared. These topics and opinions included:

- Declaring the SWP complete is unnecessary.
- The real issue is the lack of a reliable supply.
- Because of new environmental rules, the government harmed the contractors.
- Agricultural contractors are less able to pay their water bill than urban contractors.
- The DWR does not appear to be frugal nor is the DWR accountable for its actions.
- There are SWP funds, known as "priority four" money, that could be used to help solve financial problems.
- On balance, the SWP has been a tremendous asset to the state.
- The Legislature's role in restructuring SWP repayment needs to be carefully defined.

The next sections describe the essence of these discussions in more detail.

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[48] Each meeting provided the author with new insights into how the SWP financing affects Californians. Each meeting provided a significant contribution to establishing the framework for this study, and the author thanks all who took time to meet with him.

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Declaring SWP Complete

The first thing most groups wanted to talk about was the issue of declaring the SWP complete. In most, but not all meetings, there was little initial support for, and much concern with declaring the SWP "complete". Comments generally fell into one of two types:

- Declaring the SWP complete will hinder construction of new facilities and/or impede efforts to improve project yield.
- Declaring the SWP complete will force an Article 18(b) reduction in entitlements.[49]

Typical comments included:

- Declaring project complete makes it look as if we are giving up on project -- that sends bad message.
- You cannot freeze both current project facilities and current project yield.
- Declaring the project complete does not absolve the project from future environmental mitigation
- If there is a SWP II, it may have a lower credit rating than SWP I, since SWP II would have a less dependable yield.
- Because surplus water provisions favor agriculture, agriculture benefits from an article 18(b) redistribution -- at the expense of urban water users.

There was a small group of water activists that supported declaring the project complete. To their mind, such a declaration simply acknowledged reality. Namely, it is highly unlikely that the state will build any new facilities originally authorized by the Burns-Porter Act. So, they argue, we ought to declare the project complete, adjust the project yield to a realistic level, and get on with developing reasonable long term water policies.

As most participants had difficulty immediately seeing benefit to declaring the project complete, they often spent much time musing about the motivation for making such a declaration. Most participants seemed to feel that any benefits that might arise from declaring the project complete could be accomplished through amendments to existing contracts or by statements of legislative intent. For example, if the purpose of declaring the project complete was to allow contractors to decide to participate in a particular new project, the Legislature could direct the DWR to negotiate contract amendments that accomplished that goal.

However, if the goal of declaring the project complete was to remove authorization projects authorized by Burns-Porter, the participants typically were quick to point out that

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[49] Article 18(b) directs how the DWR is to adjust entitlements to reflect permanent reductions in project yield. Under Article 18(b), the DWR would be required to proportionately reduce the annual entitlements and the maximum annual entitlements "... to the extent necessary so that the sum of the revised maximum annual entitlements of all contractors will then equal such reduced minimum project yield ...". Conversely, Article 18(c) allows for the proportional restoration of the reduced entitlements after circumstances justify an upward revision.

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changes to Burns-Porter would require a vote of the people, as Burns-Porter specifically prohibited the legislature from making changes in its provision.

However, if the motivation was to bring everyone to the table to begin to work out a consensus solution, most participants felt that this research project was a good starting point.

Lack Of Reliable Supply

Instead of focusing on declaring the project complete, and working out what all that meant, most participants were much more interested in developing a more reliable supply of water. Since most of the contractors' water bill does not vary with actual water deliveries, the practical consequence of the current "administrative" drought is a near doubling of the average cost per acre-foot the contractors pay for water. Even so, many would be willing to pay the higher price *if* there was a guaranteed water supply.

A reliable water supply from SWP is important to each of the major water users. For example:

- Farmers with permanent crops do not have the option of not irrigating for just one year. Such a decision would have ramifications for years.
- Reliability is important to field crops too. It often takes many years to develop a market, but it takes only one year to lose it
- Urban industrial users also need a reliable supply. It is difficult to keep a bottling plant operating when there is no liquid to put in the bottles.
- Urban planning, in some areas, is based on receiving delivery of full entitlements. If the SWP cannot deliver full entitlements in the long run, these local development plans are obsolete.
- Reliability is important to environmental interests too. To the extent the contractors can depend on the SWP supply at what ever level, there will be less pressure on the DWR to circumvent environmental requirements.

Although some contractors would be willing to pay the higher price *if* there was a guaranteed water supply, this is not universally true. For example, contractors along the central coast are currently investing $0.5 billion on a local delivery system based on a promise of full entitlement delivery. If the SWP can only deliver 1/2 entitlements, they will pay around $1,000 per acre-foot, instead of the full entitlement cost of about $500 acre-foot. At $1,000 acre-foot, other water supply options become financially more attractive.

The "People" Harmed The Contractors

In all the meetings with SWP contractors, at least one person made the following argument. When the contractors signed contracts with the state for SWP water, they did so with the understanding that the project would be able to deliver the full 4.2 million acre-feet entitlements without violating any existing laws or regulations. "The people", through Congress, the California Legislature, and voter approved propositions, then

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changed the laws and regulations regarding environmental protection. These new environmental protection laws and regulations preclude the SWP from delivering the full 4.2 million acre-feet of entitlements. Consequently, the SWP was overbuilt. "The people's" changing of the rules harmed all contractors. Since "the people" changed the rules, "the people" should bear the financial burden.

Many of the contractors seemed frustrated with having financed a transportation system that has nearly twice the capacity as is currently used. However, even more seemed frustrated with the current use of Oroville Reservoir. From these contractors' perspective, they are paying for a dam and reservoir complex that provides essentially no water to them. In critically dry years, virtually *all* releases from Oroville are to maintain water quality -- none is exported south of the delta. Consequently, from the perspective of many, the contractors are paying for storage they cannot use.

Agriculture's Ability To Pay

The plight of the agricultural contractors was another issue consistently raised. Everyone agreed that some agricultural contractors are having a difficult time financially. However, there was disagreement about the SWP's responsibility for resolving the problems.

Agriculture's Problems

Most participants (including urban water-interests) agreed that farmers are less able to cope financially with higher water prices than urban water users. As the farmers pointed out:

- Farming is a highly leveraged business.
- Farmers operate on thin and unpredictable profit margins.
- Farms typically have few financial reserves.
- Consequently, banks and other lending institutions play a critical role in financing farm operations.

Apparently, some farmers were having serious problems coping with higher water costs before the 1987-92 drought. For example, the Kern County Water Agency (KCWA) provides SWP water to the Berrenda Mesa Water District. This SWP water is Berrenda Mesa's only water supply. Berrenda Mesa reported they started having problems with delinquent water bills in December 1984.

Yet despite the severe problems that rising water charges has apparently caused, those that rely solely on the SWP for water claimed the consequences of receiving zero SWP water in 1991 were worse. They said that lenders now feel that farms that rely solely on the SWP for water do not have a dependable water supply. Therefore, lenders value the land the same as dry range land -- essentially valueless. (Most of the water districts that rely solely on the SWP for water are on the west side of the San Joaquin Valley in Kern County.)

The farm interests offered another example about Berrenda Mesa. The land in their district is prime. They have deep soils and no drainage problems. But, the SWP is their

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sole source of water. Buena Vista Water District is just on the other side of Interstate 5 from Berrenda Mesa. There, they have inferior heavy soils and drainage can be a problem. However, they also have multiple water sources. Agricultural land in the Buena Vista Water District sells for around $3,000 per acre -- land in Berrenda Mesa is worth essentially nothing.

The west side farmers, in particular, claim the problems facing agriculture are real and severe. Berrenda Mesa now owns 16 percent of the developed farm land in their district due to defaults -- and the bills for another 7.5 percent of the land are late. Two other member agencies of KCWA related similar problems with delinquencies. It seems that some west side districts in particular are close to going under. They claim all it will take is for one major land holder to default.

The Non-Agriculture Response

It was not that the non-agricultural water-interests denied that some agricultural water users were facing serious problems. Rather, some seemed simply indifferent, others apparently saw agriculture's problems as an opportunity for solving their own water demand problems, and still others simply saw no viable solutions to the problems.

Those who seemed indifferent to agriculture's problems often focus on perceived benefits agriculture received in the early years of the project. For example, they would point out:

- In contracts, agricultural contractors chose options that stretched payment longer than urban contractors.
- Agriculture benefited from urbans carrying "surplus" entitlements through lower costs.
- In contracts, agriculture gets priority on surplus water
- In the early years of operation, agricultural contractors received surplus water at just the cost to pump the water to the point of delivery.
- The surplus water provisions are compensation to the farmers for the agriculture first provisions of 18(a).[50]

Other non-sympathetic participants said that agricultural contractors should approach their water supply problems the same as urban contractors. That is, local districts should solve

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[50] Article 18(a) dictates how the DWR is to reduce requests. Article 18(a) establishes a two-tiered approach to reducing requests. The first round reduces agricultural requests:

(a) "... up to fifty percent (50%) ... of that portion of the contractor's annual entitlement for the respective year ..."; but not more than

(b) "... a total of one hundred percent (100%) [of one year's entitlement] in any series of seven consecutive years ...".

If the first-round cuts are insufficient, any additional cuts are to be made regardless of the use to which the water will be put. Under the second round of cuts, "... the state shall reduce deliveries to each contractor in an amount which bears the same proportion to the total amount of such necessary further reduction that the contractor's annual entitlement bears to the total of the annual entitlements of all contractors for that year ...". However, the DWR "... may apportion on some other basis if such is required to meet minimum demands for domestic supply, fire protection, or sanitation during the year."

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problems internally first, through conservation, increased efficiency, reuse, etc., and not expect the other contractors to bail them out.

The second group of urban water-interests saw agriculture's problems as an opportunity for solving their own water demand problems. Their position was, if agriculture cannot afford the water, they could. Indeed, they would be more than happy to relieve agricultural water users of their SWP repayment costs *and* their SWP water. They pointed out that both the Central Utah Project and the Central Valley Project allowed farmers under economic stress to sell entitlements. So why should not the SWP allow the sale or lease of entitlements as well. Also supporting this position were those who advocate what are sometimes called "market based" solutions.

The third group, though sympathetic to agriculture's plight, simply saw no viable solutions to the problems. They observed that since the contractors pay all the costs and receive all the water[51], you can't help one group without harming another.

There was a fourth group of non-agricultural interests, small but contentious. They seemed to have what some agricultural water-interests call an "anti-ag" perspective. Examples of these perspectives include comments such as:

- The state should not provide water to low value crops in the first place.
- Protecting agriculture and the concept "those who benefit -- pay" are incompatible.
- If the whole purpose of this exercise is to shift costs, we should just re-label it as an agricultural bailout and stop the subterfuge.

Agriculture's Reply

The agricultural water-interests frequently anticipated many of the preceding comments. In most group meetings, they volunteered answers to their own rhetorical questions.

To the comments regarding surplus water, and the "agriculture first" provisions of article 18(a), agriculture responses include:

- Farmers buy water in shortage years to make up the shortage, so cost of water to farmers is even higher.

- Farmers can survive by farming half the land, and
- Farmers can "crank up" during periods of surplus water,
- But they cannot hold together the local water supply infrastructure without *some* water.

- Farmers understood the risks of a hydrological drought.
- But no one expected a zero delivery year.
- Nor did anyone expect an "administrative" drought.

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51 "Except for the water we have to give to the fish."

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Agriculture's responses to calls for selling/leasing entitlements to SWP water included:

- Kern has adopted policy allowing for temporary (10 year) entitlement transfers -- but numbers just don't work out.
- Transfers are an irritation -- they don't help farmers who want to farm, and they divert attention from solutions that could benefit everyone.

To conclude, farmers stressed:

- Farmers farm to make money.
- And farmers are looking for ways to stay in the SWP.
- But they don't have 10 years to solve the problem.

- Even if you don't like farmers, what about the impact on the business that do business with the farmers -- If the farms dry up, what are they going to do?

The DWR: Frugality & Governance

The issue of the DWR's frugality came up innocently enough. The economic literature suggests that one criticism of full cost recovery financing systems, such as the SWP, is that there is no economic incentive for the utility operator to be frugal.[52] When the author asked if this was a concern, virtually all participants in all meetings agreed that it was. The difference was that contractors tended to be much more enthusiastic in their agreement than the DWR. The discussions in this part of the meetings tended to progress through three general topics:

- Frugality and cost containment;
- The DWR's conflicting role as both SWP operator and guardian of the State's water resources, and
- Lack of SWP grievance process.

For most participants, cost containment was a major issue. Indeed, representatives from the DWR admitted they too were concerned about keeping costs down. Yet it was the contractors that were most vocal in their criticisms. They presented numerous examples of alleged wasteful practices. Often, their examples did not demonstrate that the DWR is wasteful in how it does things. Rather, the examples showed DWR spending money on things that the contractors deem unwanted or unnecessary. Examples of alleged wasteful practices included:

- Staffing levels that only go up, never go down.
- Endless studies that don't resolve problems.
- Planning for projects that go nowhere or produce no water.

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[52] See for example, James C. Bonbright, Albert L. Danielsen, and David R. Kamerschen, Principles of Public Utility Rates, (Arlington Virginia: Public Utilities Reports, Inc., March 1988), Chapter 19.

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The DWR vigorously challenged the allegations that the DWR was not frugal. The DWR argued that they operate the SWP as cost effectively as practically possible. The DWR does admit that they sometimes spend money on things the contractors do not want -- studies, right of way protection, etc. However, the DWR maintained that disagreements about spending will always occur and such disagreements do not reflect a general indictment of DWR's frugality.

Many of the participants admitted that not all the high costs are the DWR's fault. For example, there were many comments about the Department of General Services's (DGS) role in the administration of the SWP. In the area of contract administration in particular, there were numerous examples of DGS's apparent inefficiencies.

Most participants seemed to think that of the problem is DWR's dual role as utility operator and vanguard of state's water resources. The contractors in particular would frequently opine that the SWP was forced to carry costs more rightfully funded by the General Fund. Comments reflecting this opinion included:

- Funding for the DWR's guardian role is small compared to their activities.
- The Legislature and the Governor see the SWP as a cash cow.
- The DWR's tendency is to shift costs to SWP and away from the General Fund wherever possible -- for example, $6 million for BDOC [the Bay-Delta Oversight Committee]

The contractors seemed especially concerned because they have no practical recourse to not paying these charges. The SWP contracts provide no grievance resolution process. As some of the contractors said:

- The contractors pay -- period.
- Our (the contractors) only recourse is the courts, and we came very close this year.
- We want an audit with eye to "truly chargeable" costs.

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"Priority Four" Money

One topic that came up in most meetings was "priority four" money. The term *priority four* derives from the Burns-Porter Act,[53] which established four authorized uses of SWP revenues, and sets them in priority order. These uses are:

1. Payment of reasonable annual operation and maintenance costs for the SWP;
2. Annual debt service on the general obligation bonds issued for the SWP;
3. Transfer to the California Water Fund as reimbursement for any funds used from it for construction of SWP facilities; and
4. Use for acquisition and construction of:
   - the SWP,
   - facilities authorized as a part of the state Central Valley Project, or
   - facilities authorized as a part of the California Water Plan.[54]

Essentially, priority four money is the interest earned on money the SWP borrowed interest free. It arises because the contractors repay all SWP costs with interest, yet the DWR repays California Water Fund moneys used to finance SWP construction without interest. The DWR estimates that priority four funds will being accumulating in fiscal year 1998-99, and will total $1.5-$2.0 billion in 2035, the last year of the SWP contracts.[55]

Usually, it was the SWP contractors who brought up priority four money. Their issue was that by the end of the SWP contracts, 2035:

- The contractors will have repaid the full costs of constructing and operating the SWP;
- The DWR will own the SWP facilities free and clear; *and*
- The DWR will have $2 billion in the bank.

The contractors seemed to agree that they did not want to let the money build up in some bank account. Instead, they suggested the money should be rebated back to the contractors or otherwise used to the contractors benefit.

SWP Is A Tremendous Asset

Not all the comments regarding the SWP were critical. Indeed, most groups took some time to point out the tremendous benefits the SWP has provided up to this point. Typical comments included:

- The SWP's performance to date has been outstanding.
- The project's capacity is good and can help facilitate transfers in the future.
- The costs of alternative sources of water have increased much faster than SWP.
- The water the SWP made availability has facilitated economic growth.

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53 Chapter 1762, Statutes of 1959.

54 California Water Code §12937

55 Chet Winn, Chief, Division of Fiscal Services, personal conversation, June 10, 1994.

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The Legislature's Role

The final issue raised by most groups involved the Legislature's role in changing the SWP. Many participants were inherently reluctant to bring yet another dynamic into the SWP arena. Some suggested it was symptomatic of the problems with the SWP that they were inviting the Legislature's involvement. Yet most seemed to feel there were ways the Legislature could help.

Nonetheless, many participants were quick to point out there were limits on what the Legislature could do. For example, the Legislature would have to place before the voters any changes to the Burns-Porter Act. Also, concerning the SWP contracts, the Burns-Porter Act states "[s]uch contracts shall not be impaired by subsequent acts of the Legislature during the time when any of the bonds authorized herein are outstanding ...".[56] Most participants expressed concern about any changes that would jeopardize the credit rating of the SWP bonds. However, Bond Counsel seemed to think there we many things the Legislature could do that would violate neither Burns-Porter nor bond covenants.

Individual Views

It is unfair to uses broad characterizations to describe how each interest group felt about the SWP and the current financing arrangements. Each member of each group had their own unique view of how things ought to be. Yet there did seem to be broad agreement within each group of the strengths and weaknesses of the current financing system. Without repeating the preceding discussions, we describe in the following sections the broad areas of agreement for each group as well as those issues that the interest groups had not reached consensus.

The DWR

Generally, the DWR finds the current financing system satisfactory. They:

- Have a AA bond rating, which means their creditors are happy;
- Have a reliable revenue stream, which is important given that about fixed costs comprise 70 percent of their total costs; and
- Are comfortable with the administrative and operational requirements of the SWP.

The DWR still supports the original contracting principles. Chiefly,

- Those who benefit should pay, and
- Full cost recovery secured by property tax authority.

As the owner/operator of the SWP, the DWR is often the first to hear various complaints of the current system. The DWR's position is that if there were some grand solution to all the outstanding problems, they would have implemented them.

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[56] California Water Code §12937

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The DWR did have some concerns regarding declaring the SWP complete. First, the costs of changing systems should be minimized. This has two distinct implications. All things being equal, it would be *less* costly to implement options that modify the current repayment system than those options that essentially start from scratch. Similarly, it would be *more* costly to implement the changes retroactively to the beginning of the project than to implement the changes from now on.

Second, any changes to the current system must be free from controversies as to proper implementation. This applies to allocation of both costs and water among the current and future water projects. The DWR wants to avoid any appearance of operating of one water project to the damage of the other.

The DWR also vigorously challenged allegations that the DWR was not frugal. The DWR argued that they operate the SWP as cost effectively as practically possible. The DWR does admit that they sometimes spend money on things the contractors do not want -- studies, right of way protection, etc. However, the DWR maintained that disagreements about spending will always occur and such disagreements do not reflect a general indictment of DWR's frugality.

The Urban Contractors

In general, the urban contractors like the SWP. Indeed, some of the urban contractors were quick to point out that *they* have not been complaining about the SWP financing. Most admitted there were some problems with the financing, but typically characterized the problems as relatively minor and not insurmountable.

Some urban contractors point to two principles of contracts as fundamental:

- The contractors pay all costs, and
- All contractors pay an equal price for entitlement water.

These two principles, which they readily affirm, preclude simply shifting costs to urban users or shifting additional water to agriculture. According to these urban contractors, it was unrealistic to ask the people of this state to help solve the contractors' problems through a bond issue. It was also unrealistic to ask urban contractors to bear more of the costs without also giving them more of the water. The urban contractors are willing to help contractors who are in trouble, but they want something back for their efforts.

However, the most significant problem, according the some urban contractors, is the Delta. Until the Delta is "fixed", none of the options for improving yield make sense. The urban contractors want to do what ever is necessary to fix the Delta so they can then go about developing additional water supplies. However, they feel the DWR and agricultural contractors are impediments. Some contractors observe that the DWR seems unwilling to consider giving more water to fish, even though it may remove obstacles to developing additional water. They also observe that agricultural contractors seem unwilling to give additional anything -- water, money, or simply approval for the urbans to go it alone. Consequently, some urban contractors feel stymied.

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The Agricultural Contractors

The agricultural contractors and farmers all seemed to agree. The SWP ought to operate under a new principle: You pay for what you get. If you get delivery of full entitlement, you should pay the costs at full entitlement -- if you get half the supply, you should pay half the bill.

Another area of agreement regards timing -- the final water allocations come too late in the year and the initial SWP payment comes too early. Farmers have to begin arranging their financing in December in order to plant in March. However, it is difficult to get lenders to commit funds when the farmers cannot commit to how much water they will have. Even if they do get the financing, it comes after the January due date.

- Cannot afford take-or-pay with zero allocation years in the equation
- Supply announcement is too late & January repayment date is too early

The Environmentalists

Environmentalists tended to focus more on how the SWP develops and allocates water than on specific financial relationships. Their general position was that since clean potable water is a scarce and valuable resource, we should allocate it accordingly. From an economic perspective, this means the SWP should facilitate the shifting of water from less efficient to more efficient uses. Water markets are one way to accomplish this shift, full marginal cost pricing is another. In addition, the SWP ought to consider reducing demand through reuse and conservation in place of developing additional facilities. Finally, if there is going to be some sort of bond measure for water, there may be an opportunity to include funds for "real" environmental restoration and mitigation projects.

The Financial Community

The financial community is concerned about water in California.[57] Consequently, they generally support any actions that improve reliability or affordablility. They are concerned with protecting the security of outstanding bonds. However, as previously noted, there appears to be many things the Legislature could do that would violate neither Burns-Porter nor bond covenants.

If the Legislature declared the project complete, the DWR would have take care in unraveling financing for projects underway but not operational. The specific concern is violating tax laws regarding arbitrage. However, it appears doable.

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[57] On March 21, 1944, Standard and Poor's Credit Week Municipal reported the following to investors in municipal bonds. "[T]he allocation of water supplies for consumption in California remains in gridlock as both federal and state legislators try to achieve a workable solution to the conflicting interests in the Delta ... [The] problems faced by California water suppliers will have a generally negative impact on credit quality for years to come due to the economic impact and rising costs associated with water supply and reliability."

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The real issue is how the next phase of the SWP is structured. If it is a separate entity, lots of documentation would have to be recreated. Also, SWP II may have a lower credit rating, since it would have a less dependable yield of water than SWP I.

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